Acer Altos R310

User's Guide

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Record the model number, serial number, purchase date, and place of purchase information in the space provided below. The serial number and model number are recorded on the label affixed to your computer. All correspondence concerning your unit should include the serial number, model number, and purchase information.

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Purchase Date: __________________________________

Place of Purchase: _______________________________

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Notices

FCC notice

Class A devices do not have an FCC logo or FCC IDE on the label. Class B devices have an FCC logo or FCC IDE on the label. Once the class of the device is determined, refer to the following corresponding statement.

Class A equipment

This device has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This device generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. Operation of this device in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

However, there is no guarantee that interference will not occur in a particular installation. If this device does cause harmful interference to radio or television reception, which can be determined by turning the device off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the device and receiver
- Connect the device into an outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio/television technician for help

Shielded cables

All connections to other computing devices must be made using shielded cables to maintain compliance with FCC regulations.

Peripheral devices

Only peripherals (input/output devices, terminals, printers, etc.) certified to comply with the Class A or Class B limits may be attached to this equipment. Operation with noncertified peripherals is likely to result in interference to radio and TV reception.

Caution: Changes or modifications not expressly approved by the manufacturer could void the user's authority, which is granted by the Federal Communications Commission, to operate this server.

Use conditions

This part complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Canadian users

This Class A/Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Laser compliance statement

The CD-ROM drive in this server is a laser product. The CD-ROM drive's classification label (shown below) is located on the drive.

CLASS 1 LASER PRODUCT
CAUTION: INVISIBLE LASER RADIATION WHEN OPEN. AVOID EXPOSURE TO BEAM.

Important safety instructions

Read these instructions carefully. Save these instructions for future reference.

1 Follow all warnings and instructions marked on the product.

2 Unplug this product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.

3 Do not use this product near water.

4 Do not place this product on an unstable cart, stand, or table. The product may fall, causing serious damage to the product.

5 Slots and openings on the back or bottom side of the chassis are provided for ventilation; to ensure reliable operation of the product and to protect it from overheating, these openings must not be blocked or covered. The openings should never be blocked by placing the product on a bed, sofa, rug, or other similar surface. This product should never be placed near or over a radiator or heat register, or in a built-in installation unless proper ventilation is provided.

6 This product should be operated from the type of power indicated on the marking label. If you are not sure of the type of power available, consult your dealer or local power company.

7 Do not allow anything to rest on the power cord. Do not locate this product where persons will walk on the cord.

8 If an extension cord is used with this product, make sure that the total ampere rating of the equipment plugged into the extension cord does not exceed the extension cord ampere rating. Also, make sure that the total rating of all products plugged into the wall outlet does not exceed the fuse rating.

9 Never push objects of any kind into this product through chassis slots as they may touch dangerous voltage points or short out parts that could result in a fire or electric shock. Never spill liquid of any kind on the product.

10 Do not attempt to service this product yourself, as opening or removing covers may expose you to dangerous voltage points or other risks. Refer all servicing to qualified service personnel.

11 Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:

a When the power cord or plug is damaged or frayed

b If liquid has been spilled into the product

c If the product has been exposed to rain or water

d If the product does not operate normally when the operating instructions are followed. Adjust only those controls that are covered by the operating instructions since improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the product to normal condition.

e If the product has been dropped or the cabinet has been damaged

f If the product exhibits a distinct change in performance, indicating a need for service.

12 Replace the battery with the same type as the product's battery we recommend. Use of another battery may present a risk of fire or explosion. Refer battery replacement to a qualified service technician.

13 **Warning!** Batteries may explode if not handled properly. Do not disassemble or dispose of them in fire. Keep them away from children and dispose of used batteries promptly.

14 Use only the proper type of power supply cord set (provided in your accessories box) for this unit. It should be a detachable type: UL listed/CSA certified, type SPT-2, rated 7A 125V minimum, VDE approved or its equivalent. Maximum length is 15 feet (4.6 meters).

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1 System information

The Acer Altos R310 is a 1U, high density, rack optimised single processor system loaded with features. The system offers a new standard for flexible productivity ideal for local or wide area networks and multiuser server environments.

Product briefing

This section provide basic information concerning the configuration of your Altos R310 system.

Processor

- Single 2.5 GHz Intel Celeron processor with 400 MHz FSB
- Single 2.8 GHz Intel® Pentium® 4 processor with 533 MHZ FSB

  - or -
- Single 3.0 GHz (or faster) Intel® Pentium® 4 processor with 800 MHz FSB
- CPU Hyper-Threading Technology support

Memory subsystem

- Four (184 - pin) DIMM slots
- DDR 333/400 MHz Unbuffered memory modules supported
- Maximum upgrade - 4 GB

Warning! Functionality issues may be encountered if mixed memory types are installed on the same server board. DIMM modules of identical type, banking and stacking technology, and vendor should be installed in the Altos R310.

Caution! When using multiple memory modules it is recommended that you AVOID using modules from different manufacturers or that run at different speeds from each other.

Note: To run 400 MHz memory at full speed requires a processor with 800 MHz system bus frequency.

Note: To run 333 MHz memory at full speed requires a processor with 533 MHz system bus frequency.

Note: 333 MHz memory will run at 320 MHz when used with a processor with 800 MHz system bus frequency.

Storage

- Slim-type IDE CD-ROM drive
- Slim-type 3.5 inch Floppy disk drive
- Support for two (max) hard disk drives

Graphics interface

- On-board ATI Rage XL

Networking

- Dual Gigabit Ethernet support

I/O ports

- Front
  - One USB 2.0 ports
- Rear
  - Two USB 2.0 ports
  - Two PS/2 ports (keyboard/mouse)
  - Two LAN port (RJ-45)
  - One SVGA video port
  - One serial port

Serial ATA ports

- Two serial ATA ports
- Support RAID 0 or RAID 1

Note: Serial ATA supports drivers for Windows® 2000/Server 2003 only.

Caring features

Part of Acer's mission, as a company that cares about its end users, is to provide features that make operation, maintenance, and upgrading your system simpler and faster. The Altos R310 is no exception to this rule. The following features and options are provided.

- Cost efficient operation in a value oriented package
- Tool-less design
- Built-in software Serial ATA RAID support for data security and speed - By default, the Altos R310 supports RAID 0 and 1
- Front accessible USB port
- Acer EasyBUILD™ for efficient system setup and installation
- Acer Server Manager (ASM) suite of comprehensive management tools

Product specification summary

Highlighted below are the system's key features:

- Single Intel® Celeron or Pentium® 4 processor supporting Hyper-Threading Technology (P4 only)
- 400/533/800 MHz FSB supports processor speeds from 2.8 GHz to 3.2 GHz
- Intel® E7210 chipset consisting of:
  - Intel® E7210 Memory Controller Hub (MCH)
  - Intel® 6300ESB I/O Controller
- Intel® 82547GI 10/100/1000Base-T Gigabit LAN controller
- Intel 82541GI 10/100/1000Base-T Gigabit LAN controller
- Two 64 bit/ 66 MHz/ 3.3V PCI-X bus slots
- Four DIMM sockets supporting DDR 333/400 MHz ECC modules for a maximum memory capacity of 4 GB
- Media storage
  - One slim-type 3.5 inch 1.44 MB floppy drive
  - One slim-type 5.25 inch high speed CD-ROM drive
- Additional media storage capacity
  - Support for two 3.5 Inch S-ATA, ATA, or SCSI hard disk drives
- External ports
  - PS/2 keyboard and mouse ports
  - Three USB ports (1 front, 2 rear)
  - Two LAN (RJ-45) ports
  - Serial port
  - SVGA video port
- Power supply unit (PSU)
  - One 300W ATX12, auto-switching power supply
- Operating Systems supported
  - Microsoft® Windows® Server 2003
  - Microsoft® Windows® 2000
  - SCO OpenServer™ 5.0.7
  - SCO Unixware® 7.1.3
  - Novell NetWare® 6.5
  - Red Hat® Enterprise Linux 3

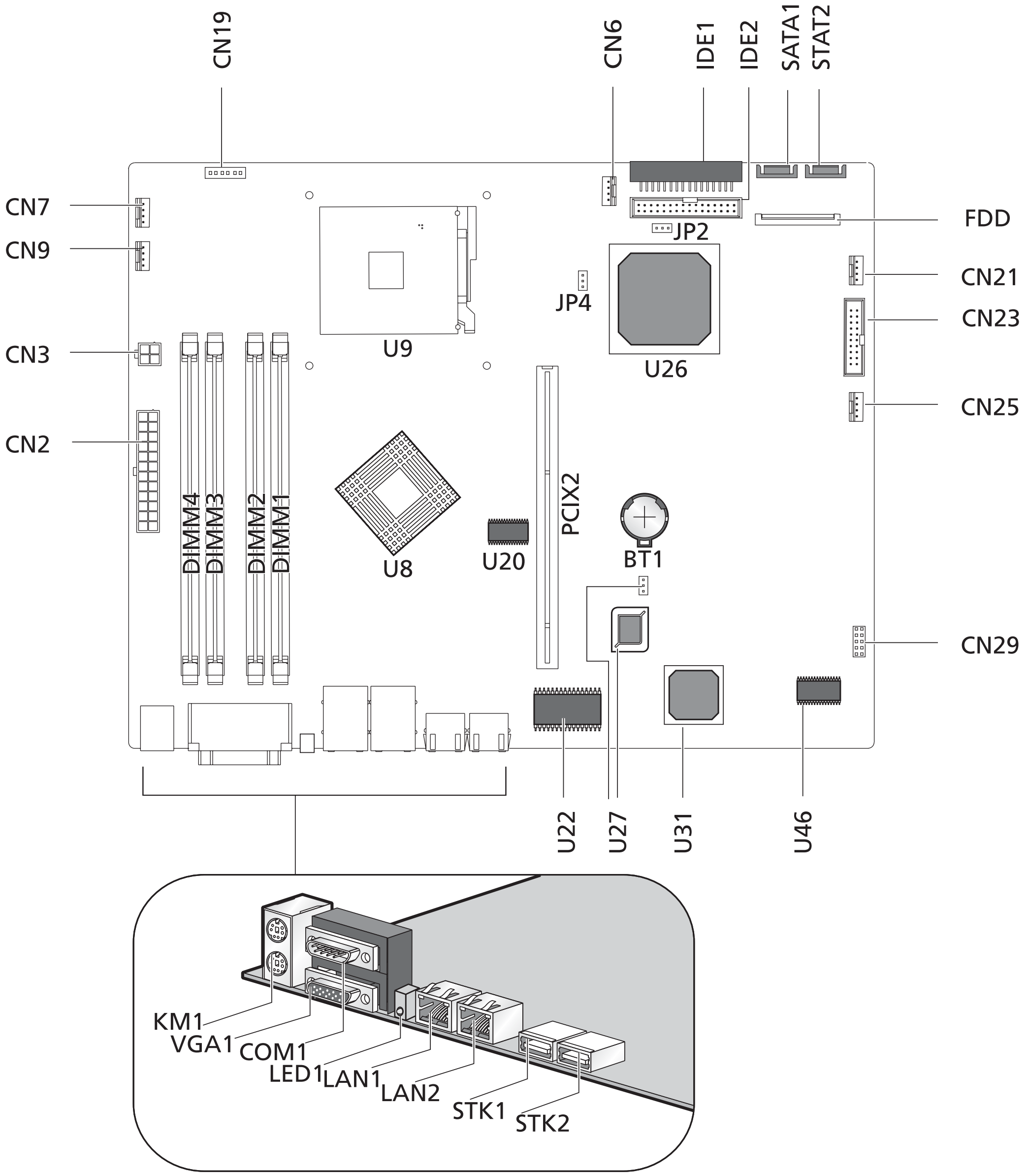
2 System tour

This chapter provides locations of various components and ports and instructions on how to set up the system.

System board

Mainboard layout

The mainboard becomes accessible once you open the system. The figure below is provided to help you indentify and locate connectors, slots and ports.


CN19
CN6
IDE1
IDE2
SATA1
STAT2
CN7
CN9
FDD
JP2
CN21
JP4
CN23
CN3
U9
U26
CN25
CN2
DIMM4
DIMM3
DIMM2
DIMM1
PCIX2
U8
U20
BT1
CN29
U22
U27
U31
U46
KM1
VGA1
COM1
LED1
LAN1
LAN2
STK1
STK2

Item	Description
BT1	Battery
CN2	ATX power connector (20 pin)
CN3	ATX power connector (4 pin)
CN6 CN7 CN9	Fan connectors
CN19	Front Panel connector
CN21	CD-ROM power connector
CN23	ARMC Feature connector
CN25	Add-on card HDD LED connector
CN29	LPC debug card interface connector
COM1	Serial port
DIMM1 DIMM2 DIMM3 DIMM4	DIMM slots
FDD	Floppy disc drive connector
JP1	Clear CMOS
JP2	Password
JP4	Boot Block
KM1	PS/2 Mouse/Keyboard ports
LAN1 LAN2	Gigabit Ethernet ports
LED1	Rear panel ID indicator
PCIX2	PCI riser slot

Item	Description
IDE1 IDE2	Primary IDE connector Secondary IDE connector
STK1 STK2	USB 2.0 ports
U8	Canterwood-ES chipset (North bridge)
U9	CPU slot (478 pin)
U20	System clock generator
U22	Super I/O
U26	Hance-Rapids chipset (South bridge)
U27	BIOS
U31	ATI Rage XL
U46	VGA SDRAM
VGA1	VGA monitor port

Jumper settings (JP1) clear CMOS

Pin Number	Pin Settings
1-2	Normal (default)
2-3	Clear CMOS

Jumper settings (JP2) Password

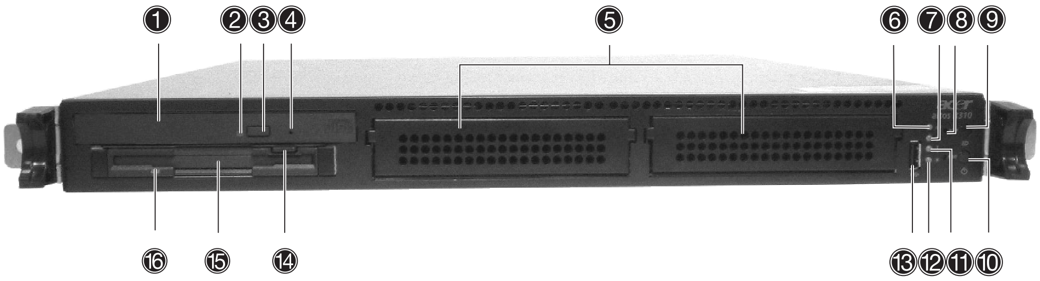
Pin Number	Pin Settings
1-2	Normal (default)
2-3	Clear password

Jumper settings (JP4) Boot Block

Pin Number	Pin Settings
1-2	Disabled (default)
2-3	Enabled

External and internal structure

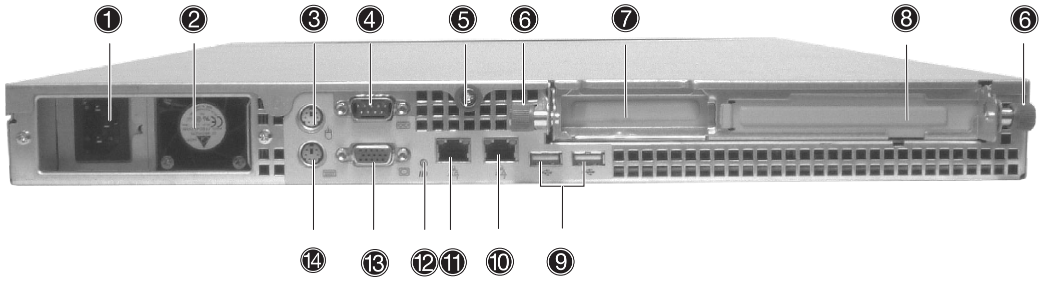
Front panel



No.	Description
1	CD-ROM drive
2	CD-ROM activity indicator
3	CD-ROM eject button
4	CD-ROM emergency eject hole
5	HDD bays
6	ID indicator
7	HDD access indicator
8	System reset button
9	ID button
10	Power button
11	Fault indicator
12	System activity indicator
13	USB 2.0 port

No.	Description
14	FDD eject button
15	Floppy disc drive (FDD)
16	FDD activity indicator

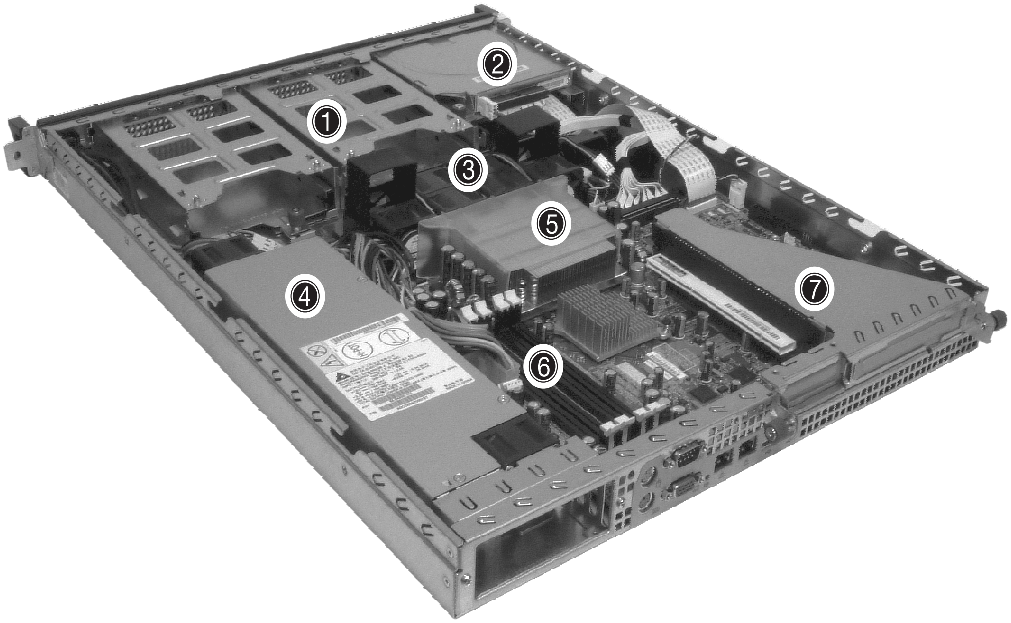
Rear panel



No.	Icon	Description
1		Main power supply unit
2		Main power supply fan-exhaust
3	🖱	PS/2 mouse port
4	IOIOI	Serial port
5		Top panel tool-less screw
6		System expansion card riser tool-less screws
7		Expansion card slot
8		Expansion card slot
9		USB 2.0 ports (two)
10 11		Gigabit LAN ports (10/100/1000 Mbps)

No.	Icon	Description
12	ID	ID indicator
13	🖵	SVGA/monitor port
14	⌨	PS/2 keyboard port

Internal components



No.	Description
1	HDD bays
2	CD-ROM/FDD assembly
3	System fans
4	Power supply unit
5	CPU/heatsink/air-baffle assembly
6	DIMM slots
7	Expansion card riser

3 Getting Started

This chapter gives information on setting up and starting to use your system

Setting up the system

Preinstallation requirements

Selecting a site

Before unpacking and installing the system, select a suitable site for the system for maximum efficiency. Consider the following factors when choosing a site for the system:

- Near a grounded power outlet
- Clean and dust-free
- Stable surface free from vibration
- Well-ventilated and away from sources of heat
- Secluded from electromagnetic fields produced by electrical devices such as air conditioners, radio and TV transmitters, etc.

Checking the package contents

Check the following items from the package:

- Acer Altos R310 system
- Acer Altos R310 User's guide
- Acer Altos R310 Accessory box

If any of the above items are damaged or missing, contact your dealer immediately.

Save the boxes and packing materials for future use.

System startup

Turning on the system

After making sure that you have properly set up the system and connected all the required cables, you can now power on the system.

To power on the system, press the power button on the front panel. Refer to “Front panel” on page 13, for help locating the power button.

The system starts up and displays a welcome message. After that, a series of power-on self-test (POST) messages appears. The POST messages indicate if the system is running well or not.

Note: If the system does not turn on or boot after pressing the power button, go to “Power-on problems” on page 21 for possible causes of boot failure.

Aside from the POST messages, you can determine if the system is in good condition by checking if the following occur during startup:

- Power indicator on the front panel lights up (green)
- Num Lock, Caps Lock, and Scroll Lock indicators on the keyboard light up

Turning off the system

To turn off the server, on the Windows task bar click on the **Start** button, point to **Shut Down...**, select **Shut down** from the drop-down window then click on **OK**. You can then turn off all peripherals connected to your server.

If you are unable to shutdown the server within Windows, press and hold the power button for at least four seconds to force quit all applications and shut down.

Power-on problems

If the system does not boot after you have applied power, check the following factors that might have caused the boot failure.

- The external power cable may be loosely connected.

  Check the power cable connection from the power source to the power cable socket on the rear panel. Make sure that the cable is properly connected to the power source and to the power cable socket.
- No power comes from the grounded power outlet.

  Have an electrician check your power outlet.
- Loose or improperly connected internal power cables.

  Check the internal cable connections. If you are not confident to perform this step, ask a qualified technician to assist you.

Warning! Make sure all power cords are disconnected from the electrical outlet before performing this task.

Note: If you have gone through the preceding actions and the system still fails to boot, ask your dealer or a qualified technician for assistance.

BIOS POST Checkpoint Codes

The POST code checkpoints are references and instructions used during the BIOS pre-boot process. The following table describes the checkpoints and associated beep codes, if any, that may occur during the POST portion of the BIOS.

Checkpoint Code	Beep Code	Description
01h	One short beep before boot	
02h		Verify Real Mode. If the CPU is in protected mode, turn on A20 and pulse the reset line, forcing a shutdown 0. NOTE: Hook routine should not alter DX, which holds the powerup CPUID.
03h		Disabel Non-Maskable Interrupts (NMI).
04h		Get CPU type from CPU registers and other methods. Save CPU type in NVRAM. NOTE: Hook routine should not alter DX, which holds the powerup CPUID.
06h		Initialize system hardware. Reset the DMA controllers, disable video, clear any pending interrupts from the real-time clock and setup port B register.
07h		Disable system ROM shadow and start to execute ROMEXEC code from the flash part. This task is pulled into the build only when the ROMEXEC relocation is installed.
08h		Initialize chipset registers to the Initial POST Values.

Checkpoint Code	Beep Code	Description
09h		Set in-POST flag in CMOS that indicates we are in POST. If this bit is not cleared by post-ClearBootFlagJ (AEh), the BIOS on next boot determines that the current configuration caused POST to fail and uses default values for configuration. Clear the CMOS diagnostic byte (register E). Check the real-time clock and verify the battery has not lost power. Checksum the CMOS and verify it has not been corrupted.
0Ah		Initialize CPU registers.
0Bh		Enable CPU cache. Set bits in CMOS related to cache.
0Ch		Set the initial POST values of the cache registers if not integrated into the chipset.
0Eh		Set the initial POST values of registers in the integrated I/O chip.
0Fh		Enable the local bus IDE as primary or secondary depending on other drives detected.
10h		Initialize power management.
11h		General dispatcher for alternate register initialization. Set initial POST values for other hardware devices defined in the register tables.
12h		Restore the contents of the CPU control word whenever the CPU is reset.
13h		Early reset of PCI devices required to disable bus master. Assumes the presence of a stack and running from decompressed shadow memory.

Checkpoint Code	Beep Code	Description
14h		Verify that the 8742 keyboard controller is responding. Send a self-test command to the 8742 and wait for results. Also read the switch inputs from the 8742 and write the keyboard controller command byte.
16h	1-2-2-3	Verify that the ROM BIOS checksums to zero.
17h		Initialize external cache before autosizing memory.
18h		Initialize all three of the 8254 timers. Set the clock timer (0) to binary count, mode 3 (square wave mode), and read/write LSB then MSB. Initialize the clock timer to zero. Set the RAM refresh timer (1) to binary count, mode 2 (Rate Generator), and read/write LSB only. Set the counter to 12H to generate the refresh at the proper rate. Set sound timer (2) to binary count, mode 3, and read/write LSB, then MSB.
1Ah		Initialize DMA command register with these settings: 1. Memory to memory disabled 2. Channel 0 hold address disabled 3. Controller enabled 4. Normal timing 5. Fixed priority 6. Late write selection 7. DREQ sense active 8. DACK sense active low Initialize all 8 DMA channels with these settings: 1. Single mode 2. Address increment 3. Auto initialization disabled (channel 4 - Cascade) 4. Verify transfer

Checkpoint Code	Beep Code	Description
1Ch		Initialize interrupt controllers for some shutdowns.
20h	1-3-1-1	Verify that DRAM refresh is operating by polling the refresh bit in PORTB.
22h	1-3-1-3	Reset the keyboard.
24h		Set segment-register addressibility to 4 GB.
28h	1-3-3-1	Using the table of configurations supplied by the specific chipset module, test each DRAM configuration to see if that particular configuration is valid. Then program the chipset to its autosized configuration. Before autosizing, disable all caches and all shadow RAM.
29h	1-3-3-2	Initialize the POST Memory Manager.
2Ah		Zero the first 512K of RAM.
2Ch	1-3-4-1	Test 512K base address lines.
2Eh	1-3-4-3	Test first 512K of RAM.
2Fh		Initialize external cache before shadowing.
32h		Compute CPU speed.
33h		Initialize the Phoenix Dispatch Manager.
34h	1-4-2-1	CMOS test.
36h		Vector to proper shutdown routine.
38h		Shadow the system BIOS.
3Ah		Autosize external cache and program cache size for enabling later in POST.

Checkpoint Code	Beep Code	Description
3Ch		If CMOS is valid, load chipset registers with values from CMOS, otherwise load defaults and display Setup prompt. If Auto Configuration is enabled, always load the chipset registers with the Setup defaults.
3Dh		Load alternate registers with CMOS values. Register-table pointers are in the altreg-table segment.
41h		Initialize extended memory for RomPilot.
42h		Initialize interrupt vectors 0 thru 77h to the BIOS general interrupt handler.
45h		Initialize all motherboard devices.
46h	2-1-2-3	Verify the ROM copyright notice
47h		Initialize support for I2O by initializing global variables used by the I2O code. Pause POST table processing if a CMOS bit is set (for debugging).
48h		Verify that the equipment specified in the CMOS matches the hardware currently installed. If the monitor type is set to 00 then a video ROM must exist. If the monitor type is 1 or 2 set the video switch to CGA. If monitor type 3, set the video switch to mono. Also specify in the equipment byte that disk drives are installed. Set appropriate status bits in CMOS or the BDA if configuration errors are found.

Checkpoint Code	Beep Code	Description
49h		Perform these tasks: 1. Size the PCI bus topology and set bridge bus numbers 2. Set the system max bus number 3. Write a 0 to the command register of every PCI device 4. Write a 0 to all 6 base registers in every PCI device 5. Write a -1 to the status register of every PCI device 6. Find all IOPs and initialize them.
4Ah		Initialize all video adapters in system.
4Bh		Initialize QuietBoot if it is installed. Enable both keyboard and timer interrupts (IRQ0 and IRQ1). If your POST tasks require interrupts off, preserve them with a PUSHF and CLI at the beginning and a POPF at the end. If you change the PIC, preserve the existing bits.
4Ch		Shadow video BIOS ROM if specified by Setup, and CMOS is valid and the previous boot was OK.
4Eh		Display copyright notice.
4Fh		Initialize MultiBoot. Allocate memory for old and new MultiBoot history tables.
50h		Display CPU type and speed.
51h		Checksum CMOS and initialize each EISA slot with data from the initialization data block.
52h		Verify keyboard reset.
54h		Initialize keystroke clicker if not enabled in Setup.
55h		Enable USB devices.

Checkpoint Code	Beep Code	Description
58h	2-2-3-1	Test for unexpected interrupts. First do an STI for hot interrupts. Secondly, test the NMI for an unexpected interrupt. Thirdly, enable the parity checkers and read from memory, checking for an unexpected interrupt.
59h		Register POST Display Services, fonts, and languages with the POST Dispatch Manager.
5Ah		Display prompt "Press F2 to enter SETUP."
5Bh		Disable CPU cache.
5Ch		Test RAM between 512K and 640K.
60h		Determine and test the amount of extended memory available. Determine if memory exists by writing to a few strategic locations and see if the data can be read back. If so, perform an address-line test and a RAM test on the memory. Save the total extended memory size in the CMOS at cmosExtended.
62h		Perform an address line test on A0 to the amount of memory available. This test is dependent on the processor, since the test will vary depending on the width of memory (16 or 32 bits). This test will also use A20 as the skew address to prevent corruption of the system memory.
64h		Jump to UserPatch1. See "The POST Component."
66h		Set cache registers to their CMOS values if CMOS is valid, unless auto configuration is enabled, in which case load cache registers from the Setup default table.
67h		Quick initialization of all Application Processors in a multi-processor system.

Checkpoint Code	Beep Code	Description
68h		Enable external cache and CPU cache if present. Configure non-cacheable regions if necessary. NOTE: Hook routine must preserve DX, which carries the cache size to the DisplayCacheSizeJ routine.
69h		Initialize the handler for SMM.
6Ah		Display external cache size on the screen if it is non-zero. NOTE: Hook routine must preserve DX, which carries the cache size from the cacheConfigureJ routine.
6Bh		If CMOS is bad, load Custom Defaults from flash into CMOS. If successful, reboot.
6Ch		Display shadow message.
6Eh		Display the starting offset of the non-disposable segment of the BIOS.
70h		Check flags in CMOS and in the BIOS data area for errors detected during POST. Display error messages on the screen.
72h		Check status bits to see if configuration problems were detected. If so, display error messages on the screen.
76h		Check status bits for keyboard-related failures. Display error messages on the screen.
7Ch		Initialize the hardware interrupt vectors from 08 to 0F and from 70h to 77h. Also set the interrupt vectors from 60h to 66h to zero.
7Dh		Initialize Intelligent System Monitoring.

Checkpoint Code	Beep Code	Description
7Eh		The Coprocessor initialization test. Use the floating point instructions to determine if a coprocessor exists instead of the ET bit in CR0.
80h		Disable onboard COM and LPT ports before testing for presence of external I/O devices.
81h		Run late device initialization routines.
82h		Test and identify RS232 ports.
83h		Configure Fisk Disk Controller.
84h		Test and identify parallel ports.
85h		Display any ESCD read errors and configure all PnP ISA devices.
86h		Initialize onboard I/O and BDA according to CMOS and presence of external devices.
87h		Initialize motherboard configurable devices.
88h		Initialize interrupt controller.
89h		Enable NMI.
8Ah		Initialize Extended BIOS Data Area and initialize the mouse.
8Bh		Setup interrupt vector and present bit in Equipment byte.
8Ch		Initialize both of the floppy disks and display an error message if failure was detected. Check both drives to establish the appropriate diskette types in the BIOS data area.
8Fh		Count the number of ATA drives in the system and update the number in bdaFdiskcount.

Checkpoint Code	Beep Code	Description
90h		Initialize hard-disk controller. If the CMOS RAM is valid and intact, and fixed disks are defined, call the fixed disk init routine to intialize the fixed disk system and take over the appropriate interrupt vectors.
91h		Configure the local bus IDE timing register based on the drives attached to it.
92h		Jump to UserPatch2.
93h		Build MPTABLE for multi-processor boards.
95h		1. Check CMOS for CD-ROM drive present 2. Activate the drive by checking for media present 3. Check sector 11h (17) for Boot Record Volume Descriptor 4. Check the boot catalog for validity 5. Pick a boot entry 6. Create a Specification Packet
96h		Reset segment-register addressibility from 4GB to normal 64K by generating a Shutdown 8.
97h		Create pointer to MP table in Extended BDA.
98h	1-2	Search for option ROMs. ROM scan the area from C800h for a length of BCP_ROM_Scan_Size (or to E000h by default) on every 2K boundry, looking for add on cards that need initialization.
99h		Check support status for Self-Monitoring Analysis Reporting Technology (disk-failure warning).
9Ah		Shadow miscellaneous ROMs if specified by Setup and CMOS is valid and the previous boot was OK.

Checkpoint Code	Beep Code	Description
9Ch		Set up Power Management. Initiate power - management state machine.
9Dh		Initialize Security Engine.
9Eh		Enable hardware interrupts.
9Fh		Check the total number of Fast Disks (ATA and SCSI) and update the bdaFdiskCount.
A0h		Verify that the system clock is interrupting.
A2h		Setup Numlock indicator. Display a message if key switch is locked.
A4h		Initialize the typematic rate.
A8h		Overwrite the "Press F2 for Setup" prompt with spaces, erasing it from the screen.
AAh		Scan the key buffer to see if the F2 key was struck after keyboard interrupts were enabled. If an F2 keystroke is found, set a flag.

ACh		Enter SETUP
		If (F2 was pressed)
		go to SETUP
		Else if (errors were found)
		display "Press F1 or F2" prompt
		if (F2 is pressed)
		go to setup
		else if (F1 is pressed)
		boot
		Else boot

AEh		Clear ConfigFailedBit and InPostBit in CMOS.

Checkpoint Code	Beep Code	Description

B0h		Check for errors
		If (errors were found)
		beep twice
		display "F1 or F2" message
		if (F2 keystroke) go to SETUP
		if (F1 keystroke) go to BOOT

B1h		Inform RomPilot about the end of POST.
B2h		Change status bits in CMOS and/or the BIOS data area to reflect the fact that POST is complete.
B4h		One quick beep.

B5h		Turn off <Esc> and <F2> key checking.
		IF (VGA adapter is present)
		IF (OEM screen is still up)
		Note OEM screen is gone.
		Fade out OEM screen.
		Reset video: clear screen, reset cursor, reload DAC.
		ENDIF
		ENDIF

B6h		If password on boot is enabled, a call is made to Setup to check password. If the user does not enter a valid password, Setup does not return.
B7h		Initialize ACPI BIOS.
B9h		Clear all screen graphics before booting.
BAh		Initialize the SMBios header and sub-structures.
BCh		Clear parity-error latch.
BDh		Display Boot First menu if MultiBoot is intstalled.

Checkpoint Code	Beep Code	Description
BEh		If BCP option is enabled, clear the screen before booting.
BFh		Check virus and backup reminders. Display System Summary.
C0h		Try to boot with INT 19.
C1h		Initialize the Post Error Manager.
C2h		Write PEM errors.
C3h		Display PEM errors.
C4h		Initialize system error handler.
C5h		PnPnd dual CMOS (optional).
C6h		Initialize note dock.
C7h		Initialize note dock late.
C8h		Force check (optional).
C9h		Extended checksum (optional).
CAh		Redirect Int 15h to enable target board to use remote keyboard (PICO BIOS).
CBh		Redirect Int 13h to Memory Technologies Devices such as ROM, RAM, PCMCIA, and serial disk (PICO BIOS).
CDh		Redirect Int 10h to enable target board to use a remote serial video (PICO BIOS).
CEh		Initialize digitizer device and display installed message if successful.
D2h		Unknown interrupt.
Dfh	4-2-4-4	A20 test error.
E0h		Initialize the chipset.

Checkpoint Code	Beep Code	Description
E1h		Initialize the bridge.
E2h		Initialize the CPU.
E3h		Initialize system timer.
E4h		Initialize system I/O.
E5h		Check force recovery boot.
E6h		Checksum BIOS ROM.
E7h		Go to BIOS.
E8h		Initialize Multi-Processor
E9h		Set huge segment.
EAh		Initialize OEM special code.
EBh		Initialize PIC and DMA.
ECh		Initialize Memory type.
EDh		Initialize Memory size.
EEh		Shadow Boot Block.
EFh		System memory test.
F0h		Initialize interrupt vectors.
F1h		Initialize Run Time Clock.
F2h		Initialize video.
F3h		Initialilze System Management Mode.
F4h		Output one beep.
F5h		Boot to Mini DOS.
F6h		Clear Huge Segment.
F7h		Boot to Full DOS.

4 Configuring the system

This chapter discusses the precautionary measures and installation procedures you need to know when upgrading the system.

Upgrading the system

Certain components of the server are upgradeable such as the drives, the CPU, the memory, and the expansion cards. However, for safety purposes, we do not recommend that you perform these upgrades yourself. If you want to replace or upgrade any of these components, contact your dealer or a qualified service technician for assistance.

Important: Observe the installation precautions described in the subsequent section when installing or removing a server component.

Installation precautions

Before you install any server component, we recommend that you read the following sections. These sections contain important ESD precautions along with preinstallation and post-installation instructions.

ESD precautions

Electrostatic discharge (ESD) can damage the processor(s), motherboard, disk drive(s), expansion board(s), or other components. Always observe the following precautions before you install server components:

1 Do not remove a component from its protective packaging until you are ready to install it.

2 Wear a wrist grounding strap and attach it to a metal part of the server before handling components. If a wrist strap is not available, maintain contact with the server throughout any procedure requiring ESD protection.

Preinstallation instructions

Always observe the following before you install any component:

1. Turn off the system and all the peripherals connected to it.
2. Unplug all cables from the power outlets.
3. Open the system according to the instructions on page 42.
4. Follow the ESD precautions described in this section when handling a server component.
5. Remove any expansion board(s) or peripheral(s) that block access to the DIMM socket or other component connector.

See the following sections for specific installation instructions on the component you want to install.

Warning! Failure to properly turn off the server before you start installing components may cause serious damage. Do not attempt the procedures described in the following sections unless you are a qualified service technician.

Post-installation instructions

Observe the following after installing a server component:

1. See to it that all components are installed according to the described step-by-step instructions.
2. Reinstall any expansion board(s) or peripheral(s) that you have previously removed.
3. Reinstall the chassis panels.
4. Connect the necessary cables.
5. Turn on the system.

Opening the server

Caution! Before you proceed, make sure that you have turned off your system and all peripherals connected to it. Read the "Preinstallation instructions" on page 41.

You need to open the server before you can install additional components. The top panel is removable to allow access to the system's internal components. Refer to the following sections for instructions.

Before opening the server

Before opening the server, observe the following precautions:

1. Turn off the system and all the peripherals connected to it.
2. Unplug all cables from the power outlets.
3. Place the system unit on a flat, stable surface.

Note: Because of the R310 design specification, the top panel needs to be removed to access the system board.

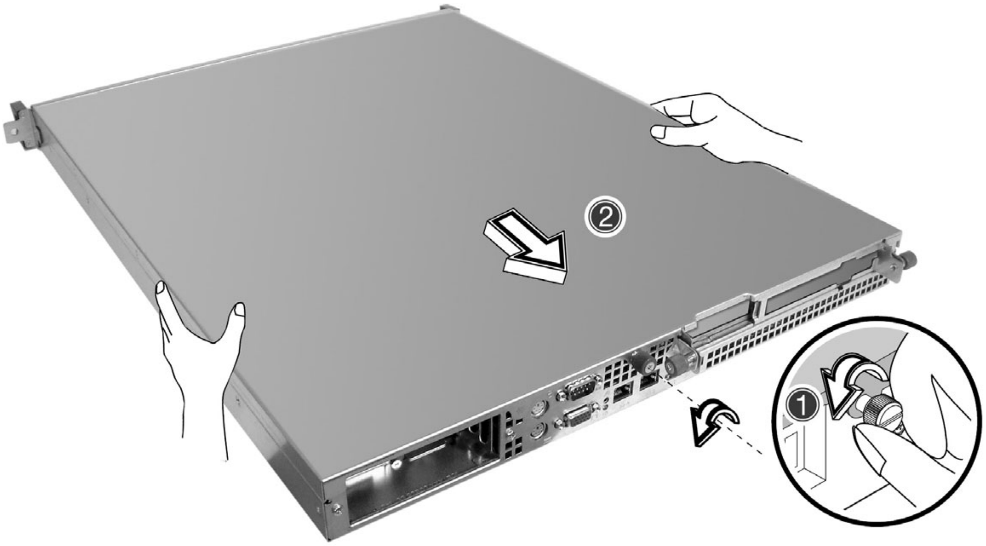
To remove the top panel

The top panel is attached to the server by one (non-removable) thumbscrew. See “Rear panel” on page 14 for help locating the screw.

To remove the top panel:

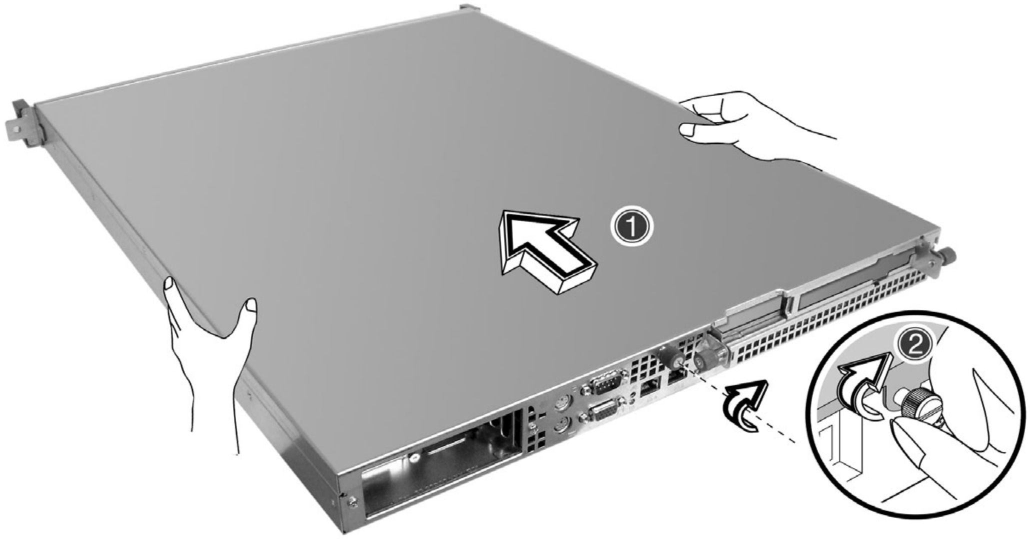
1 Loosen the thumbscrew located at the top-middle of the rear panel **(1)**.

2 Slide the panel rearward **(2)** and lift to detach it from the chassis.



To replace the top panel

Align the cover over the chassis, with the tool-less screw oriented toward the back panel of the server. Slide the cover toward the front **(1)** and secure the cover by tightening the thumbscrew **(2)**.



Observe the post-installation instructions described on page 41.

Installing expansion cards

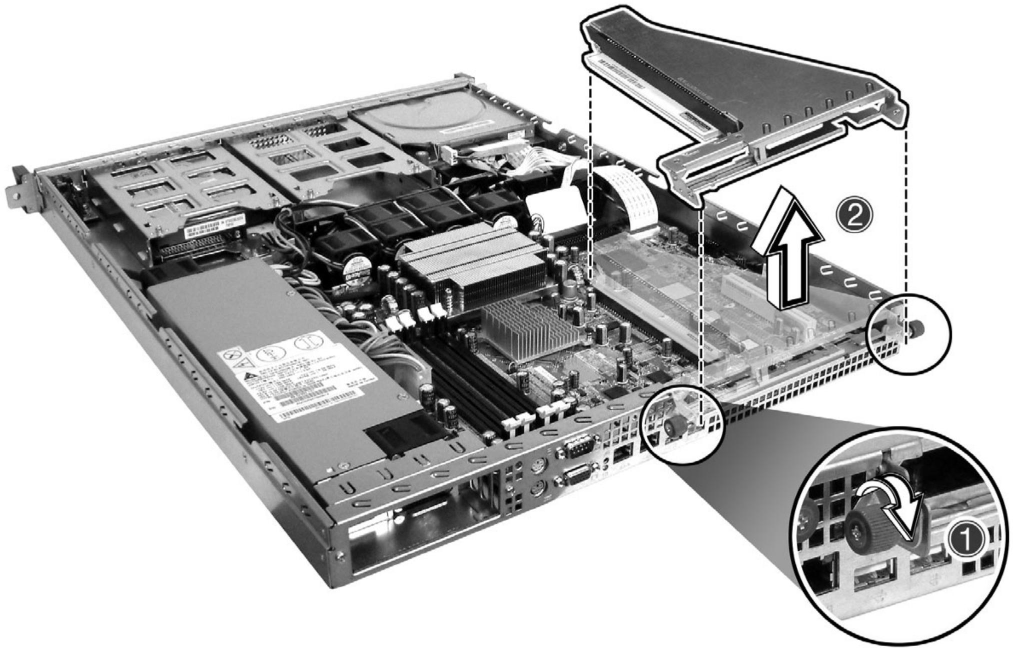
This section explains how to install an expansion card. The onboard expansion slots support PCI (Peripheral Component Interconnect) cards. Before installing expansion cards, observe ESD precautions and Pre-installation precautions as noted on page 40.

Note: The BIOS setup automatically detects and assigns resources to the new device (applicable only to Plug-and-Play expansion cards).

To install an expansion card

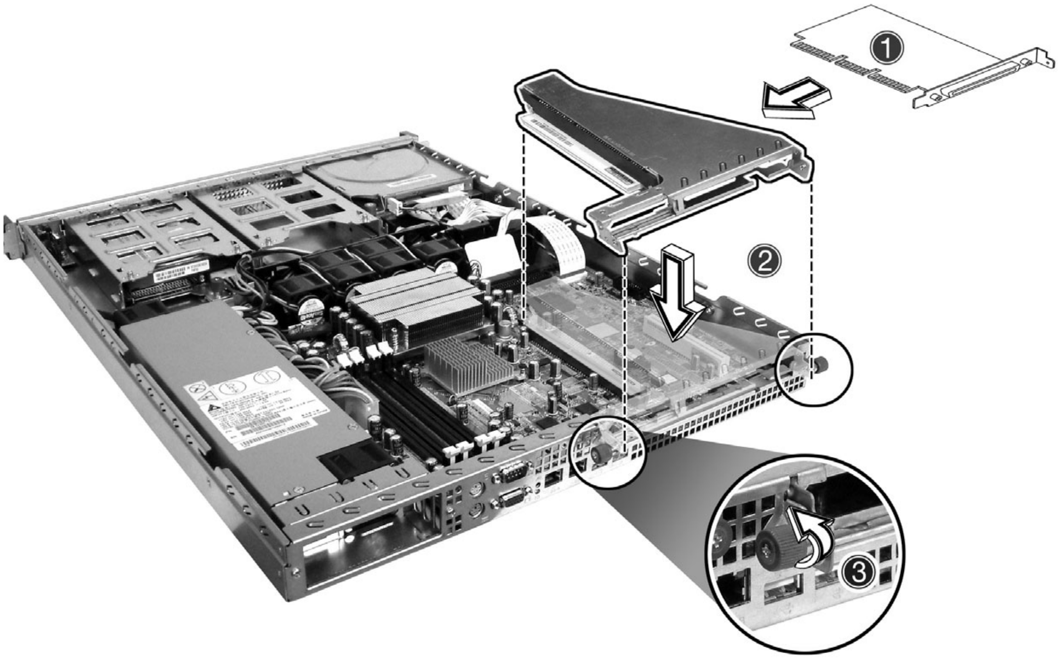
1 Remove the system cover. See “To remove the top panel” on page 43 for more information.

2 Loosen the thumbscrews on the expansion card riser bracket **(1)**, then gently lift the riser from the chassis **(2)**.



3 Remove the expansion slot cover from the rear of the metal bracket.

4 Align and insert the PCI card onto the slot bracket (1), then reinstall the PCI riser into the housing **(2)**. Turn the thumbscrews clockwise to secure the bracket **(3)**.



5 Observe the post-installation instructions described on page 41.

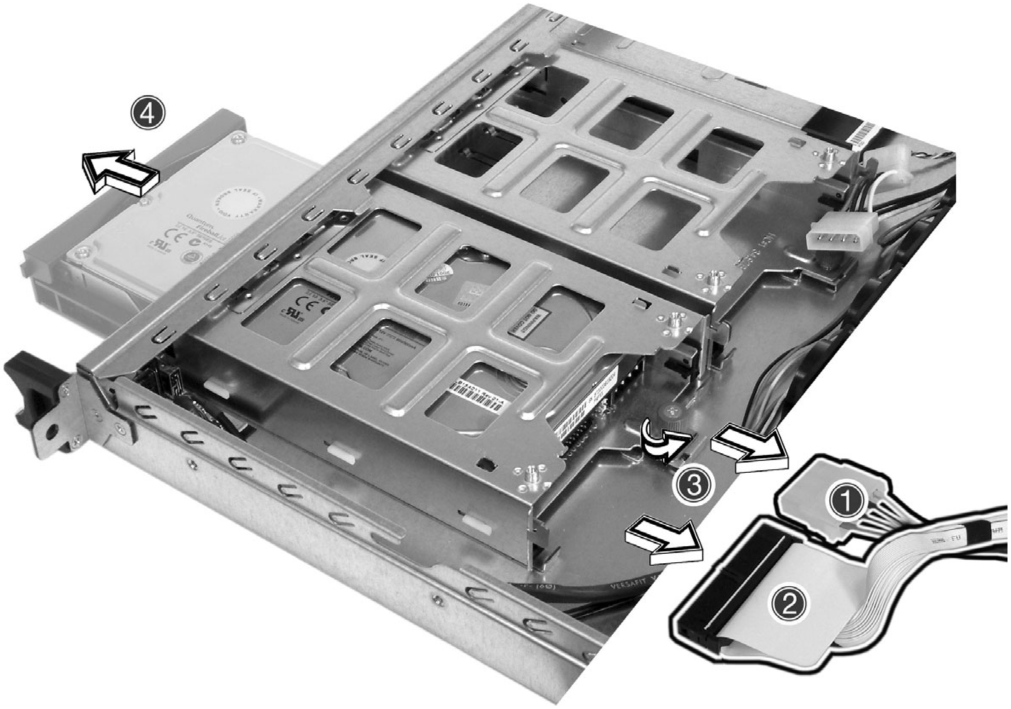
Installing and removing a hard disc drive

Removing a hard disc

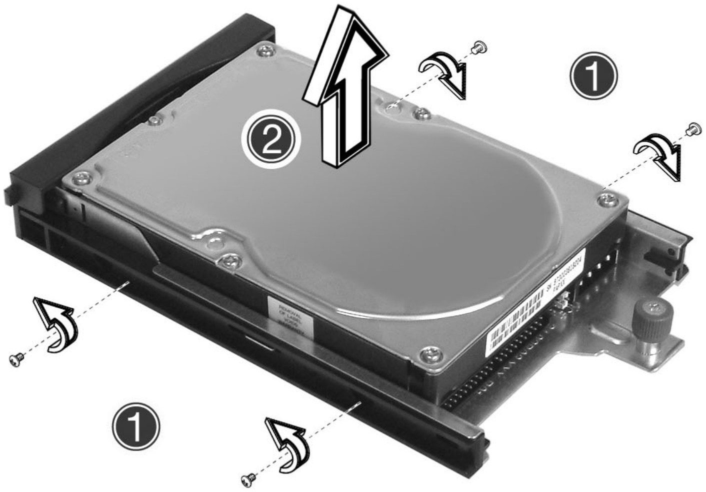
1 Remove the system cover. See “To remove the top panel” on page 43 for more information.

2 Remove the front bezel from the system. Press the release buttons at either end.

3 Disconnect all cables from the back of the hard discs **(1)** and **(2)**. Turn the thumbscrew counter-clockwise **(3)** to release the HDD tray and gently slide it forward, out of the system **(4)**.

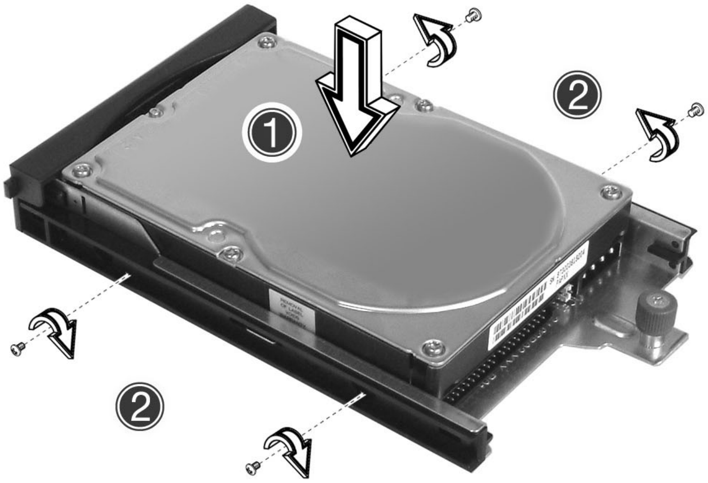


4 Remove the screws that secure the hard disc to the disc tray **(1)** and remove the drive from the tray **(2)**. Keep the screws for later use.

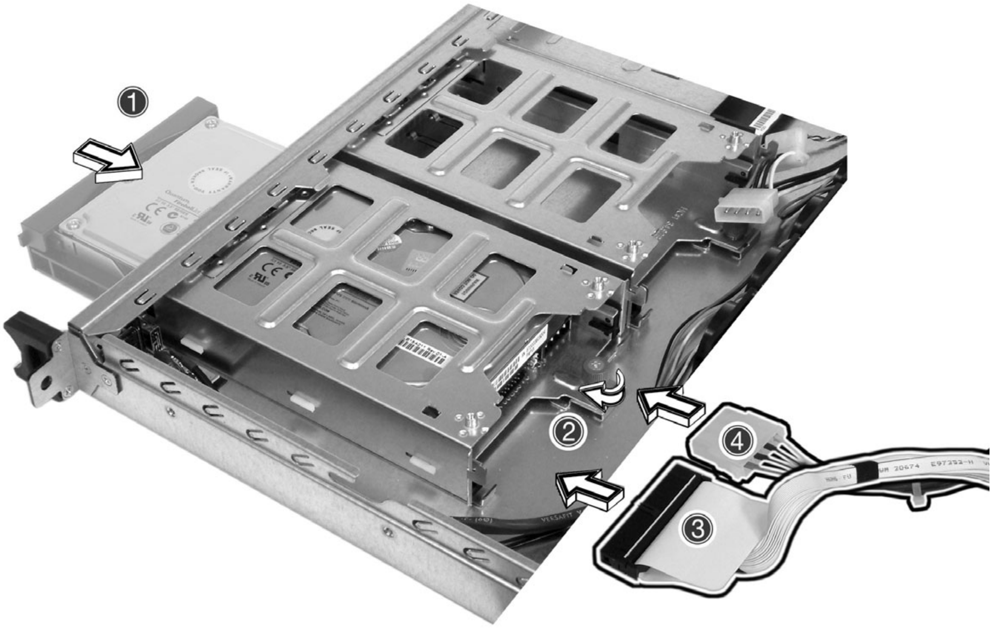


Installing a hard disc

1 Insert the new hard disc drive into the disc tray **(1)** and secure it with the four screws you removed in the previous step **(2)**.



2 Reinsert the disc tray into the front of the system **(1)**. Turn the thumbscrew clockwise to secure the disc tray **(2)**, and reconnect all hard disc cables **(3)** and **(4)**.



3 Replace the system cover and the front bezel, making sure to observe the post-installation instructions described on page 41.

Upgrading the CPU

This section includes instructions for removing and installing a CPU.

Important! Always observe the ESD precautions when installing or removing a system component. Refer to page 40.

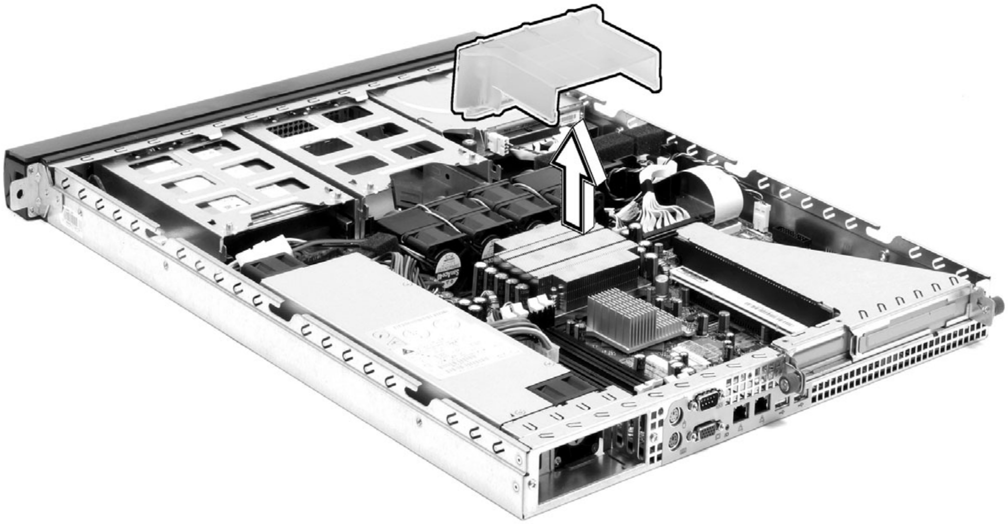
Removing a CPU

1 Remove the system cover. See “To remove the top panel” on page 43.

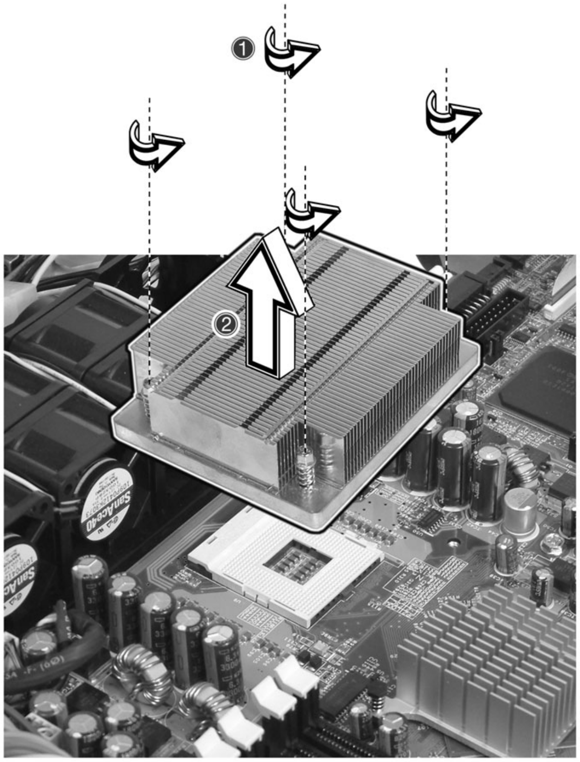
2 Locate the CPU/heatsink/air-baffle assembly on the mainboard. See “Mainboard layout” on page 9.

Warning! The heatsink may be very hot. After opening the system, allow the heatsink to cool for several minutes if the system was operating before you removed the cover.

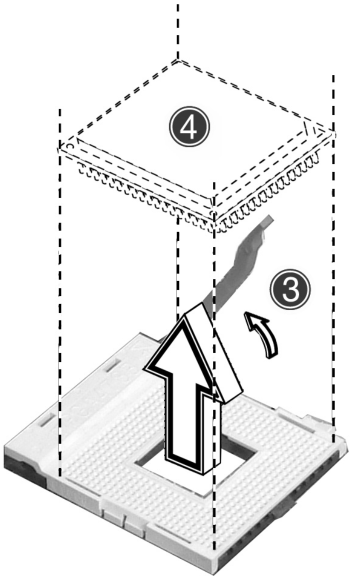
3 Remove the air-baffle from the heatsink, as shown below.



4 Loosen the four corner screws that secure the heatsink to the mainboard **(1)** and gently remove it **(2)**.



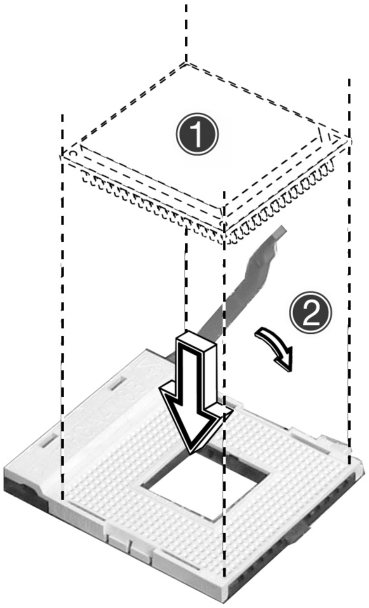
5 Locate and lift the CPU socket locking lever **(3)** to release the processor. Gently pull up on the processor **(4)** to remove it.



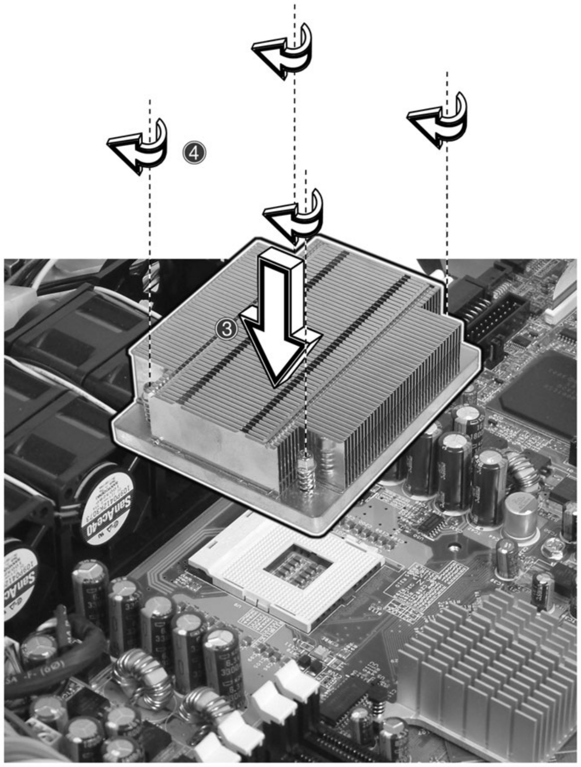
Installing a CPU

Having followed the steps above, the CPU socket is empty and you are ready to install your new processor.

1 Insert the CPU into the mainboard socket **(1)**, making sure the indicator on the processor is aligned with the indicator on the socket. Lower the CPU locking lever to secure the processor **(2)**.



2 Replace the heatsink over the CPU socket **(3)** and tighten the four corner screws **(4)**.



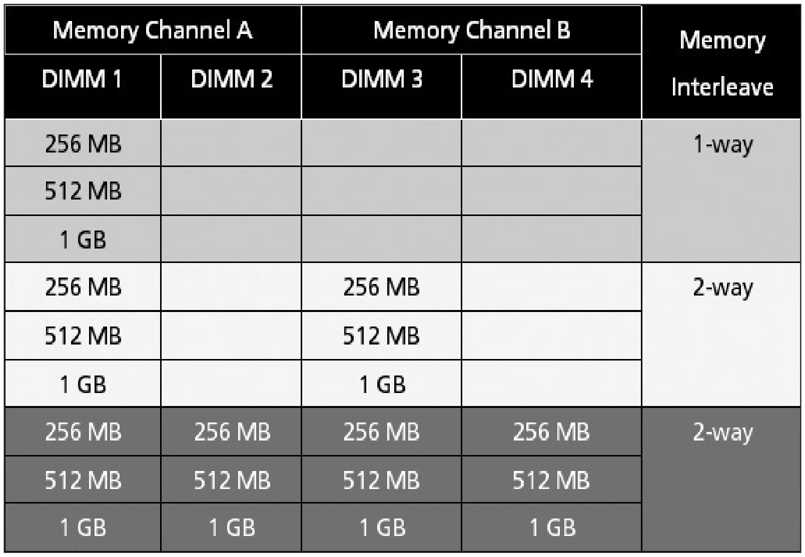
3 Replace the system cover, making sure to observe the post-installation instructions described on page 41.

Upgrading the system memory

Memory configuration

This section includes instructions for removing and installing a memory module.

The following table illustrates the greater efficiency of 2-way memory interleave configurations as compared to a 1-way memory interleave configuration.



Memory Channel A		Memory Channel B		Memory Interleave
DIMM 1	DIMM 2	DIMM 3	DIMM 4	
256 MB				1-way
512 MB				
1 GB				
256 MB		256 MB		2-way
512 MB		512 MB		
1 GB		1 GB		
256 MB	256 MB	256 MB	256 MB	2-way
512 MB	512 MB	512 MB	512 MB	
1 GB	1 GB	1 GB	1 GB	

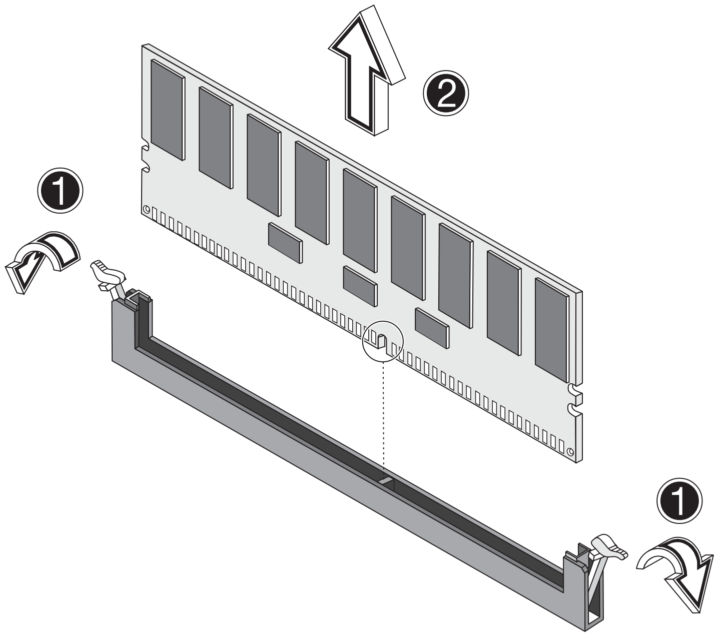
Warning! Functionality issues may be encountered if mixed memory types are installed on the same server board. DIMM modules of identical type, banking and stacking technology, and vendor should be installed in the Altos R310.

To remove a DIMM

Before installing a new DIMM in a socket, remove first any previously installed DIMM from that socket.

Important: Before removing any DIMM from the mainboard, make sure to create a backup file of all important data.

1. Observe the ESD precautions and pre-installation procedures described on page 41.
2. Locate the DIMM sockets on the mainboard.
3. Press the holding clips on both sides of the socket outward to release the DIMM **(1)**.
4. Gently pull the DIMM upward to remove it from the socket **(2)**.



Note: Place your forefingers on the top of the DIMM before pressing the holding clips to gently disengage the DIMM from the socket.

To install a DIMM

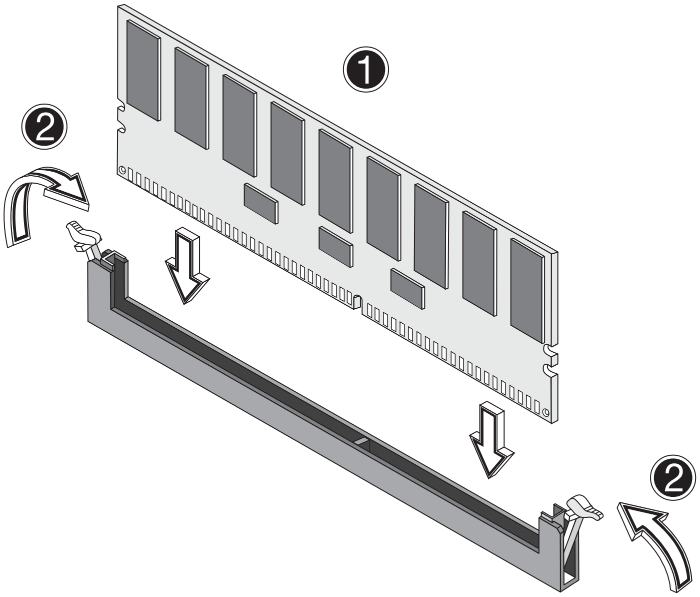
1 Observe the ESD precautions and pre-installation procedures described on page 40.

2 Locate the DIMM sockets on the mainboard.

3 Open the clips on the socket.

4 Align and insert the DIMM into the socket **(1)**.

5 Press the holding clips inward to lock the DIMM in place **(2)**.



DIMMs must be installed in the following order: DM1. DM2, DM3 and DM4

Note: The DIMM socket is slotted to ensure proper installation. If you insert a DIMM but it does not fit easily into the socket, you may have inserted it incorrectly. Reverse the orientation of the DIMM and insert it again.

6 Observe the post-installation instructions described on page 41.

Reconfiguring the system memory

The system automatically detects the amount of memory installed. Run the BIOS setup to view the new value for total system memory and make a note of it.

5 BIOS setup

This chapter gives information about the system BIOS and discusses how to configure the system by changing the settings of the BIOS parameters.

BIOS setup

BIOS setup is a hardware configuration program built into your system's Basic Input/Output System (BIOS). Since most systems are already properly configured and optimized, there is no need to run this utility. You will need to run this utility under the following conditions:

- When changing the system configuration
- When a configuration error is detected by the system and you are prompted ("Run Setup" message) to make changes to the BIOS setup

Note: If you repeatedly receive Run Setup messages, the battery may be bad. In this case, the system cannot retain configuration values in CMOS. Ask a qualified technician for assistance.

- When redefining the communication ports to prevent any conflicts
- When making changes to the Power Management configuration
- When changing the password or making other changes to the security setup

BIOS setup loads the configuration values in a battery-backed nonvolatile memory called CMOS RAM. This memory area is not part of the system RAM which allows configuration data to be retained when power is turned off.

Before you run BIOS setup, make sure that you have saved all open files. The system reboots immediately after you close setup.

Entering BIOS setup

Power on the server to start the system POST (Power On Self Test) process. During bootup, press **F2** to enter the BIOS setup screen.

Note: You must press **F2** while the system is booting. This key stroke function does not work at any other time.

There are several tabs on the setup screen corresponding to the six major BIOS menus:

- Main
- Advanced
- Power
- Boot
- Security
- Exit

The parameters on the screens shown in this User's guide display default system values. These values may not be the same as those in your system.

Note the following reminders when moving around the setup screen:

- Use the **Left** and **Right** arrow keys to move to the next page or to return to the previous screen.
- Use the **Up** and **Down** arrow keys to select an item.
- Use the **+** and **-** keys to select an option.

Note: You can configure a parameter that is enclosed in square brackets. Grayed-out items have fixed settings and are not user-configurable.

- Use the **Tab** key to select a field.

- Use the **Enter** key to display a submenu screen.

Note: When a parameter is preceded by a (**>**), it means that a submenu screen is available.

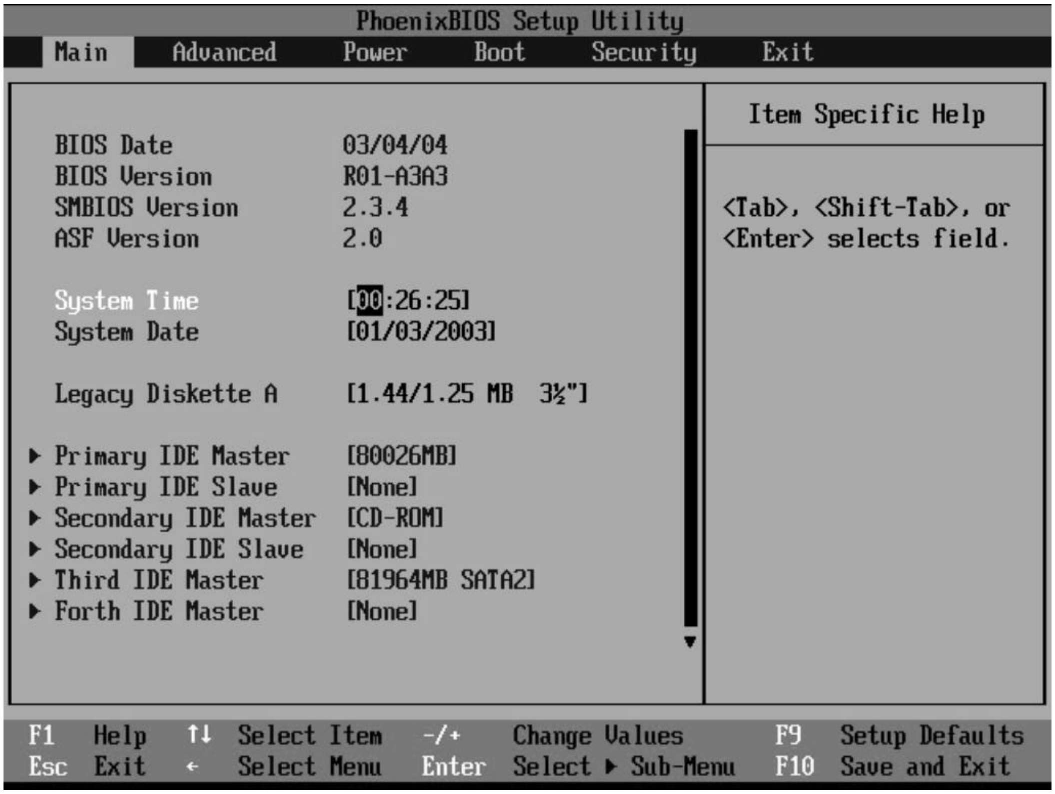
- Press **F1** for General Help on using the BIOS setup.
- Press **F10** to save changes and close the BIOS setup.
- Press **Esc** to close the BIOS setup without saving changes.

In the descriptive table following each of the screen illustrations, settings in **boldface** are the default and suggested parameter settings.

Main

The Main menu displays basic and important information about the system. This information is necessary for troubleshooting and may be required when asking for technical support.

The last two parameters on the screen let you define the system's time and date settings. The real-time clock keeps the system date and time. After setting the date and time, you do not need to enter them every time you turn on the system. As long as the internal battery remains good and connected, the clock continues to keep the date and time accurately even when the power is off.


PhoenixBIOS Setup Utility
Main
Advanced
Power
Boot
Security
Exit
Item Specific Help
F1 Help
↑↓ Select Item
-/+ Change Values
F9 Setup Defaults
Esc Exit
↔ Select Menu
Enter Select ▶ Sub-Menu
F10 Save and Exit

```
BIOS Date              03/04/04
BIOS Version           R01-A3A3
SMBIOS Version         2.3.4
ASF Version            2.0

System Time            [00:26:25]
System Date            [01/03/2003]

Legacy Diskette A      [1.44/1.25 MB  3½"]

▶ Primary IDE Master   [80026MB]
▶ Primary IDE Slave    [None]
▶ Secondary IDE Master [CD-ROM]
▶ Secondary IDE Slave  [None]
▶ Third IDE Master     [81964MB SATA2]
▶ Forth IDE Master     [None]
```

<Tab>, <Shift-Tab>, or <Enter> selects field.

Parameter	Description	Option
BIOS Date	The date when BIOS was built.	[03/04/04]
BIOS Version	The version of current BIOS.	R01-A3A3
SMBIOS Version	Supports DMTF SMBIOS version.	2.3.4
ASF Version	Supports DMTF ASF version.	2.0

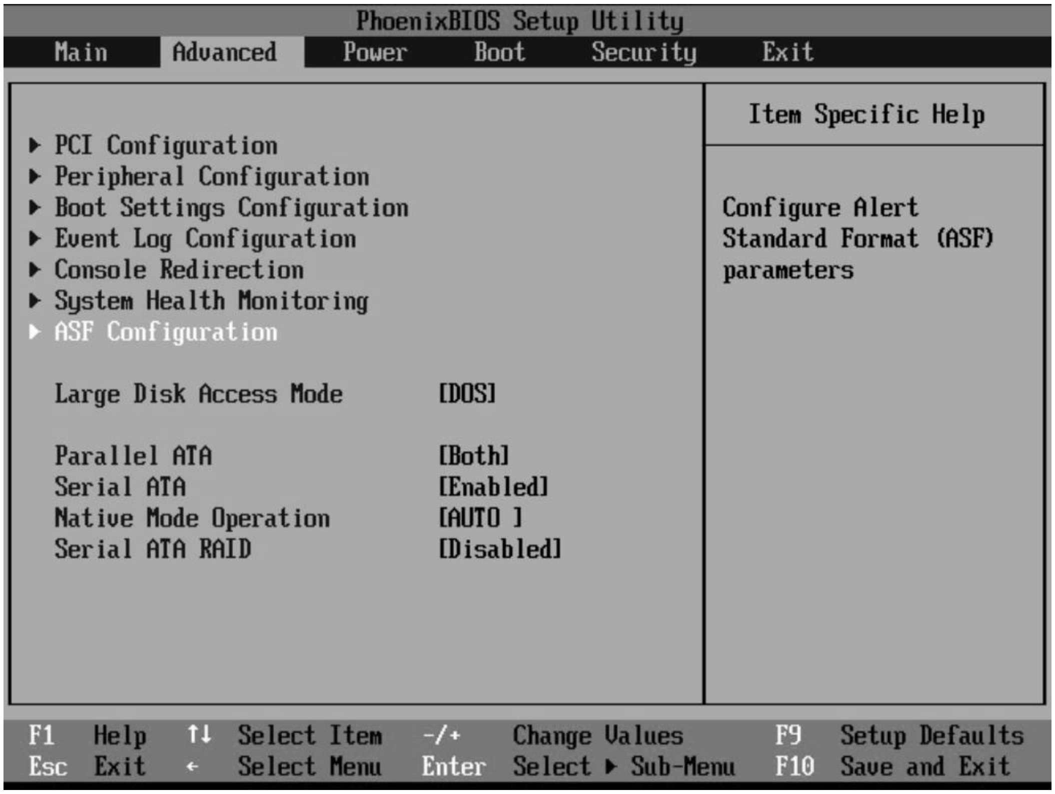
Parameter	Description	Option
System Time	Sets the correct time.	[HH:MM:SS]
System Date	Sets the correct date.	[mm/dd/yyyy]
Legacy Diskette A: Primary IDE Master Primary IDE Slave Secondary IDE Master Secondary IDE Slave Third IDE Master Fourth IDE Master	Display drive type if detected.	N/A

Advanced

The Advanced menu contains parameter values that define how the system behaves on startup.

Warning! **Be cautious in setting parameter values in the Advanced menu as any incorrect value may cause the system to malfunction.**

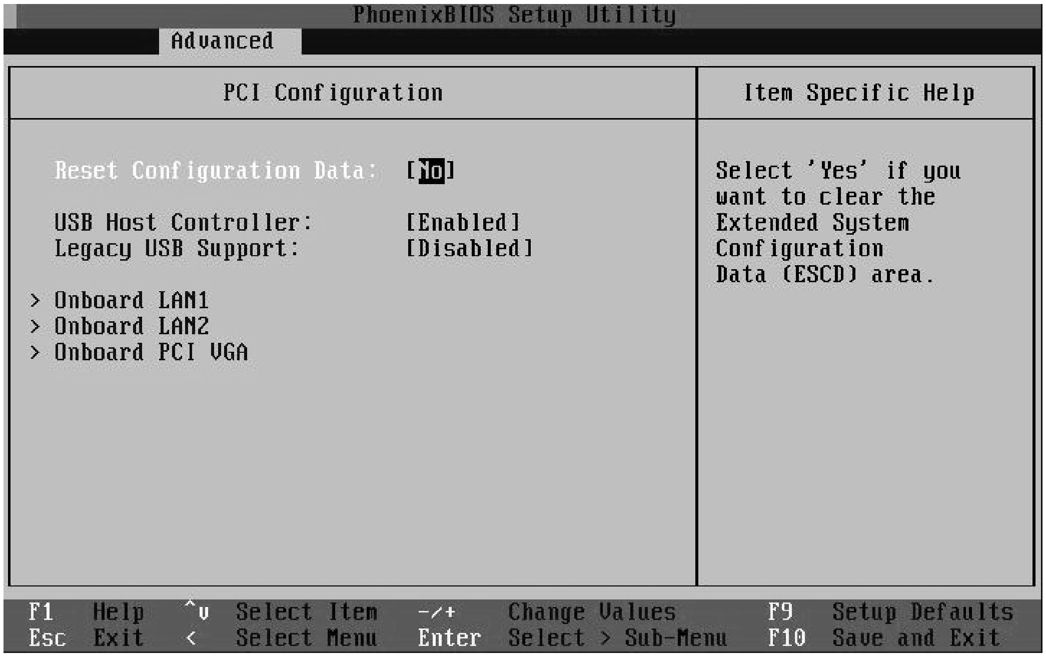
Press **Enter** to enter the submenu screen of the parameters shown in the screen below.



```
                 PhoenixBIOS Setup Utility
  Main    Advanced    Power    Boot    Security    Exit

                                             Item Specific Help
 ▶ PCI Configuration
 ▶ Peripheral Configuration
 ▶ Boot Settings Configuration              Configure Alert
 ▶ Event Log Configuration                  Standard Format (ASF)
 ▶ Console Redirection                      parameters
 ▶ System Health Monitoring
 ▶ ASF Configuration

   Large Disk Access Mode      [DOS]

   Parallel ATA                [Both]
   Serial ATA                  [Enabled]
   Native Mode Operation       [AUTO ]
   Serial ATA RAID             [Disabled]

 F1   Help   ↑↓  Select Item   -/+    Change Values      F9   Setup Defaults
 Esc  Exit   ←   Select Menu   Enter  Select ▶ Sub-Menu  F10  Save and Exit
```

Parameter	Description	Option
PCI Configuration Peripheral Configuration Boot Settings Configuration Event Log Configuration Console Redirection System Health Monitoring ASF Configuration	Open the submenu to configure these settings by pressing 'Enter'.	N/A **Enter** is the only option.
Large Disk Access Mode		**DOS**
Parallel ATA		**Both** Disabled Primary Secondary
Serial ATA		**Enabled** Disabled
Native Mode Operation		**Auto**
Serial ATA RAID		Enabled **Disabled**

PCI Configuration

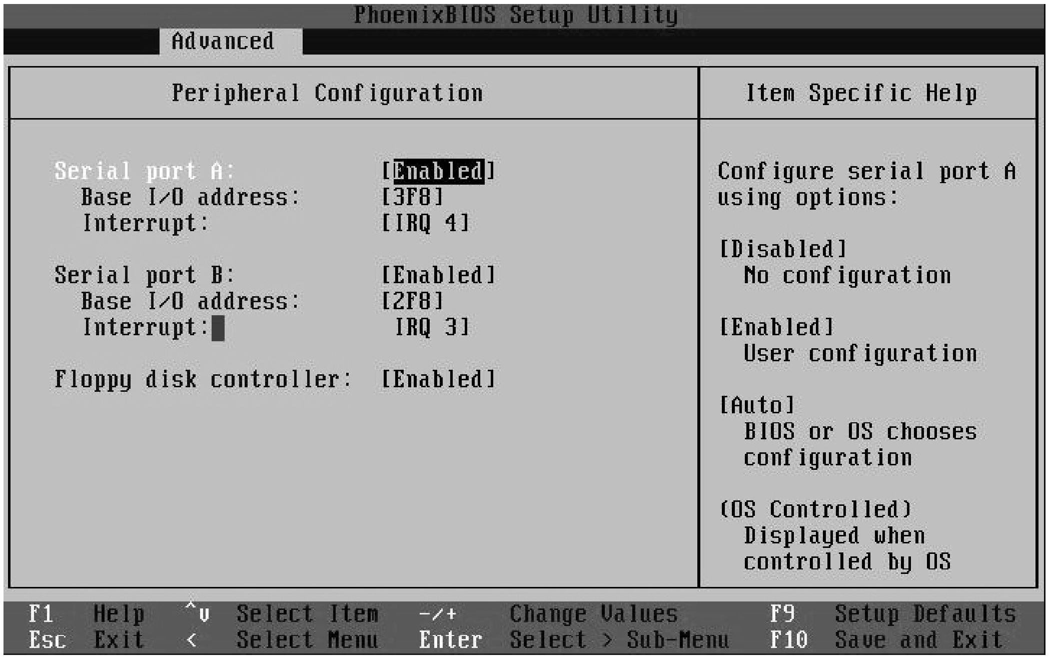


```
                         PhoenixBIOS Setup Utility
             Advanced

                 PCI Configuration                      Item Specific Help

   Reset Configuration Data:   [No]               Select 'Yes' if you
                                                  want to clear the
   USB Host Controller:        [Enabled]          Extended System
   Legacy USB Support:         [Disabled]         Configuration
                                                  Data (ESCD) area.
 > Onboard LAN1
 > Onboard LAN2
 > Onboard PCI VGA

 F1   Help   ^v  Select Item   -/+    Change Values      F9   Setup Defaults
 Esc  Exit   <   Select Menu   Enter  Select > Sub-Menu  F10  Save and Exit
```

Parameter	Description	Option
Reset Configuration Data		**No** Yes
USB Host Controller	Enables or disables the USB function in Chipset.	**Enabled** Disabled
Legacy USB Support	Enables or disables support for legacy USB devices.	**Auto** Disabled
Onboard LAN1 Onboard LAN2 Onboard PCI VGA	Enables or disables onboard devices.	N/A **Enter** is the only option

Peripheral Configuration

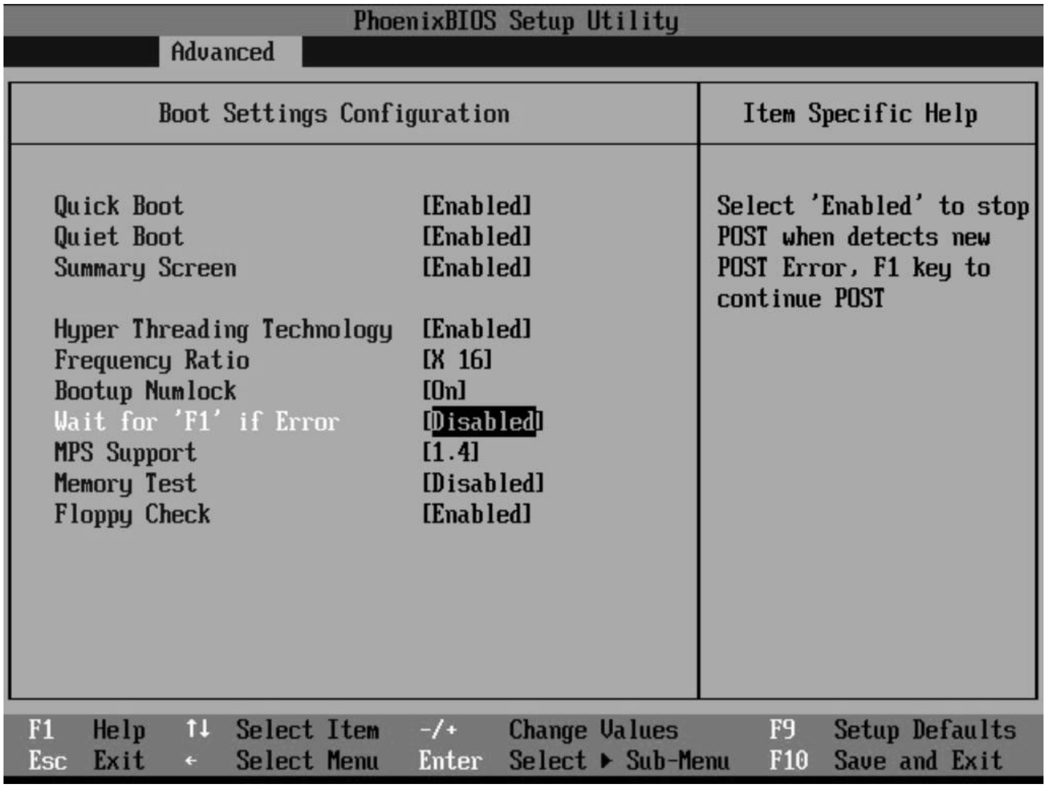
The Peripheral Configuration submenu lets you define the parameter settings for the system's parallel and serial ports.



```
                          PhoenixBIOS Setup Utility
              Advanced
 ┌──────────────────────────────────────────────────┬───────────────────────────┐
 │              Peripheral Configuration            │    Item Specific Help     │
 ├──────────────────────────────────────────────────┼───────────────────────────┤
 │                                                  │                           │
 │   Serial port A:              [Enabled]          │ Configure serial port A   │
 │     Base I/O address:         [3F8]              │ using options:            │
 │     Interrupt:                [IRQ 4]            │                           │
 │                                                  │ [Disabled]                │
 │   Serial port B:              [Enabled]          │   No configuration        │
 │     Base I/O address:         [2F8]              │                           │
 │     Interrupt:█                IRQ 3]            │ [Enabled]                 │
 │                                                  │   User configuration      │
 │   Floppy disk controller:     [Enabled]          │                           │
 │                                                  │ [Auto]                    │
 │                                                  │   BIOS or OS chooses      │
 │                                                  │   configuration           │
 │                                                  │                           │
 │                                                  │ (OS Controlled)           │
 │                                                  │   Displayed when          │
 │                                                  │   controlled by OS        │
 └──────────────────────────────────────────────────┴───────────────────────────┘
  F1   Help   ↑↓  Select Item   -/+    Change Values         F9   Setup Defaults
  Esc  Exit   ←→  Select Menu   Enter  Select > Sub-Menu     F10  Save and Exit
```

Parameter	Description	Options
Serial Port A Serial Port B		Auto **Enabled** Disabled
Base I/O address		**3F8** 2F8 3E8 2E8
Interrupt		**IRQ 4** IRQ 3
Floppy Disk Controller		**Enabled** Disabled

Boot Settings Configuration

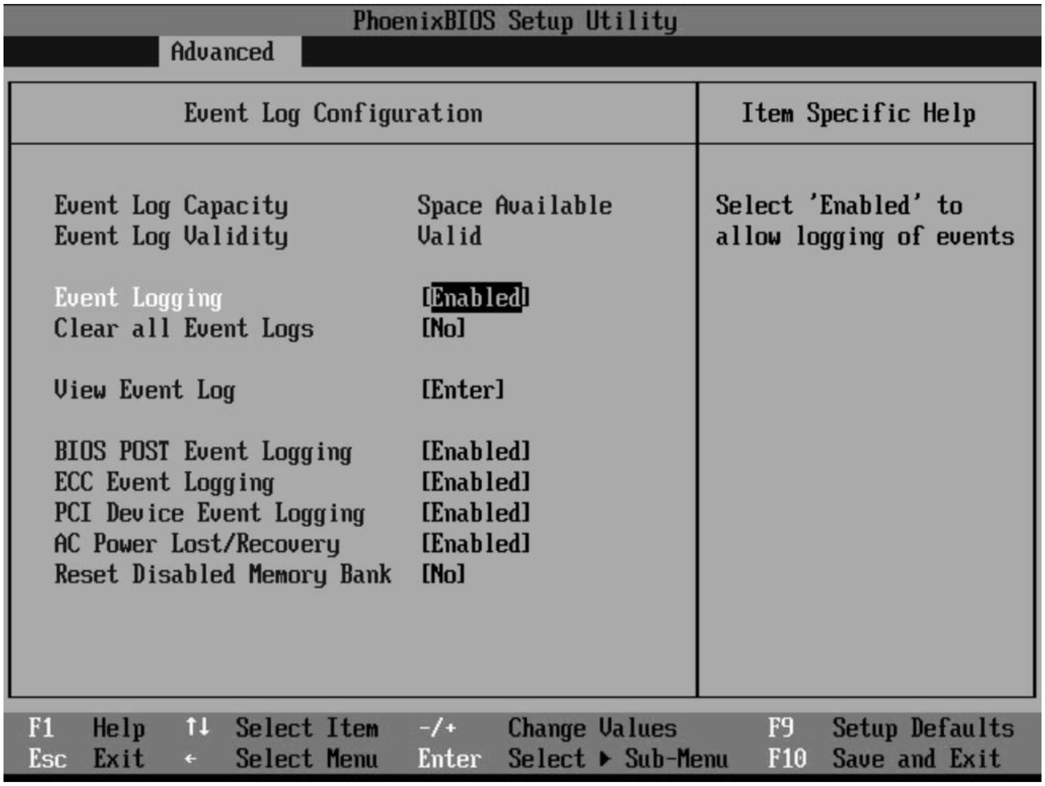


```
                         PhoenixBIOS Setup Utility
            Advanced

      Boot Settings Configuration                     Item Specific Help

  Quick Boot                    [Enabled]         Select 'Enabled' to stop
  Quiet Boot                    [Enabled]         POST when detects new
  Summary Screen                [Enabled]         POST Error, F1 key to
                                                  continue POST
  Hyper Threading Technology    [Enabled]
  Frequency Ratio               [X 16]
  Bootup Numlock                [On]
  Wait for 'F1' if Error        [Disabled]
  MPS Support                   [1.4]
  Memory Test                   [Disabled]
  Floppy Check                  [Enabled]

F1   Help  ↑↓  Select Item  -/+    Change Values     F9   Setup Defaults
Esc  Exit  ←   Select Menu  Enter  Select ▶ Sub-Menu F10  Save and Exit
```

Parameter	Description	Option
Quick Boot	Allows BIOS to skip certain tests to decrease the time needed while booting the system.	**Enabled** Disabled
Quiet Boot	Displays the OEM logo when enabled; displays normal POST messages when disabled.	**Enabled** Disabled
Summary Screen		**Enabled** Disabled
Hyper Threading Technology		**Enabled** Disabled
Frequency Ratio	Displays the CPU/Bus ratio of the system.	**X to 1**

Parameter	**Description**	**Option**
Bootup NumLock	Sets the Power-on state for NumLock.	**On** Off
Wait for ‘F1’ if Error	Displays the error message if POST error occurs.	Enabled **Disabled**
MPS Support		**1.4**
Memory Test	Performs memory read/write test during POST.	Enabled **Disabled**
Floppy Check	Displays the error message if floppy is not detected.	**Enabled** Disabled

Event Log Configuration

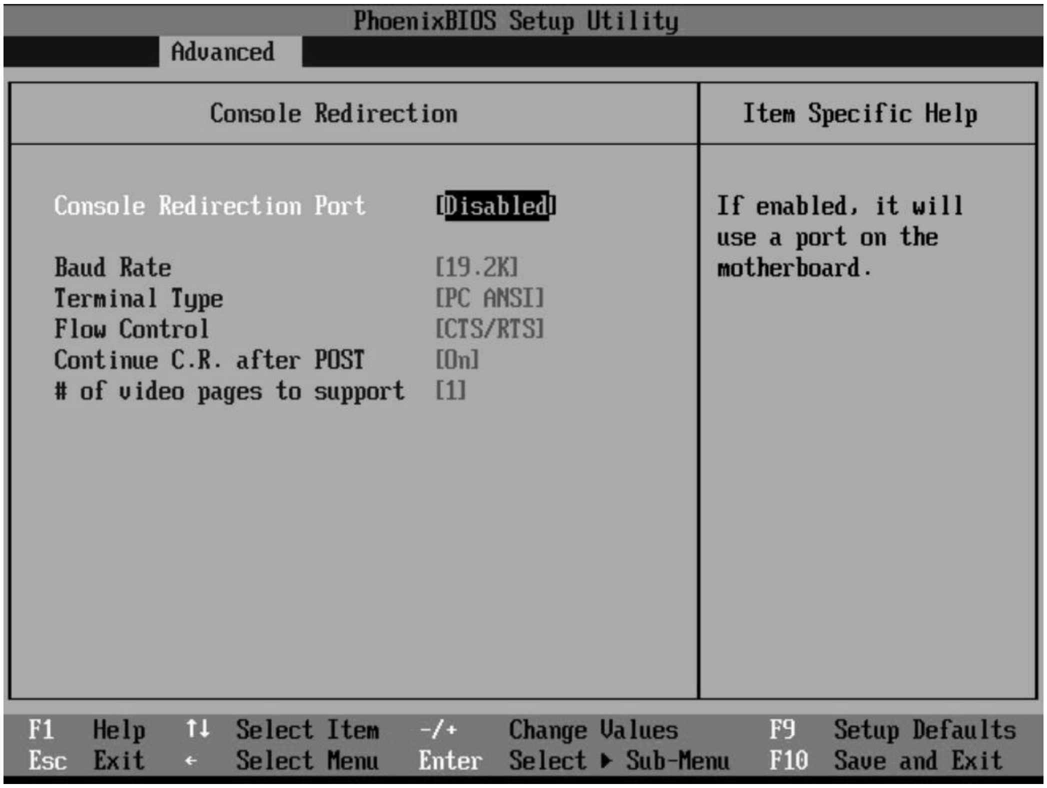


```
                         PhoenixBIOS Setup Utility
          Advanced
        Event Log Configuration                     Item Specific Help

   Event Log Capacity          Space Available    Select 'Enabled' to
   Event Log Validity          Valid              allow logging of events

   Event Logging               [Enabled]
   Clear all Event Logs        [No]

   View Event Log              [Enter]

   BIOS POST Event Logging     [Enabled]
   ECC Event Logging           [Enabled]
   PCI Device Event Logging    [Enabled]
   AC Power Lost/Recovery      [Enabled]
   Reset Disabled Memory Bank  [No]

 F1   Help  ↑↓  Select Item   -/+    Change Values       F9   Setup Defaults
 Esc  Exit  ←   Select Menu   Enter  Select ▶ Sub-Menu   F10  Save and Exit
```

Parameter	Description	Option
Event Log Capacity	Displays event log space status.	**Space Available**
Event Log Validity	Displays event log status.	**Valid**
Event Logging	Allows logging of events and SMI/NMI.	**Enabled** Disabled
Clear All Event Logs	Clears event log area and resets to 'No' at next boot if Yes is selected.	Yes **No**
View Event Log	Displays detail event log messages by pressing 'Enter.'	N/A **Enter** is the only option.
BIOS POST Even Logging	Allows logging of BIOS POST events.	**Enabled** Disabled

Parameter	Description	Option
ECC Event Logging	Allows logging of ECC events.	**Enabled** Disabled
PCI Event Logging	Allows logging of PCI error events.	**Enabled** Disabled
AC Power Lost/ Recovery		**Enabled** Disabled
Reset Disabled Memory Bank	Enables all memory banks at the next boot. Memory DIMM might be disabled by memory reduction feature.	Yes **No**

Console Redirection


PhoenixBIOS Setup Utility
Advanced
Console Redirection
Item Specific Help
F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults
Esc Exit ← Select Menu Enter Select ▸ Sub-Menu F10 Save and Exit

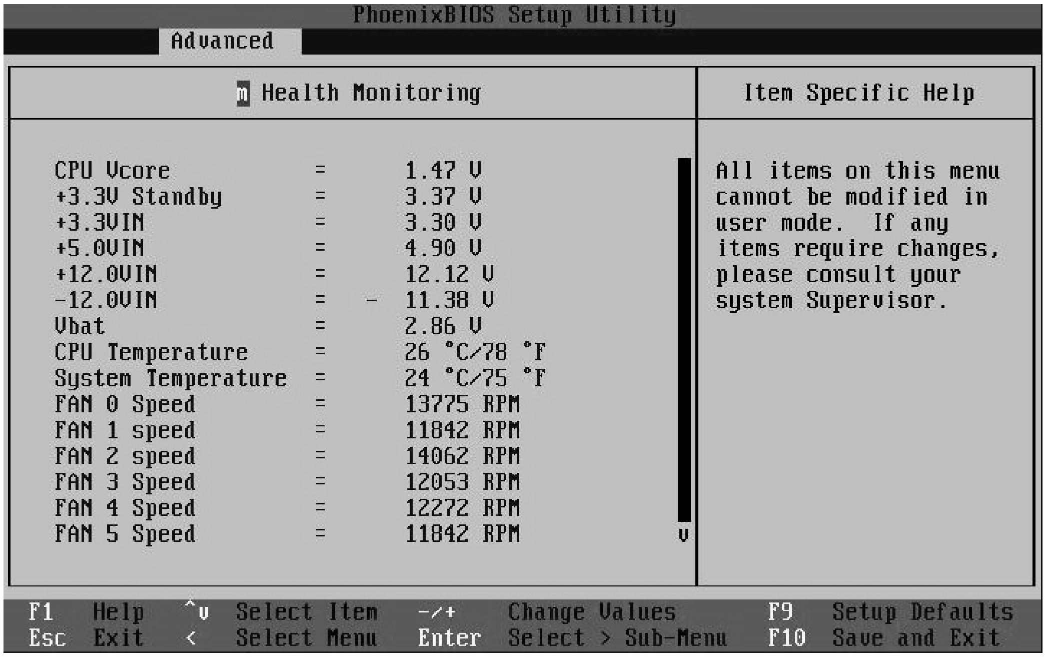
```
Console Redirection Port      [Disabled]

Baud Rate                     [19.2K]
Terminal Type                 [PC ANSI]
Flow Control                  [CTS/RTS]
Continue C.R. after POST      [On]
# of video pages to support   [1]
```

If enabled, it will use a port on the motherboard.

Parameter	Description	Option
Console Redirection Port	Selects the system port for console redirection.	COM1 Serial Port A Serial Port B **Disabled**
Baud Rate	Sets the rate of communication.	9600 KB **19.2 KB** 38.4 KB 57.6 KB 115.2 KB
Terminal Type		**PC ANSI** VT100+ VT-UTF8 VT100

Parameter	Description	Option
Flow Control		No **CTS/RTS** XON/XOFF CTS/RTS+CD
Continue C.R. after POST		**On** Off
# of video pages to support		**1** (Default) through 8

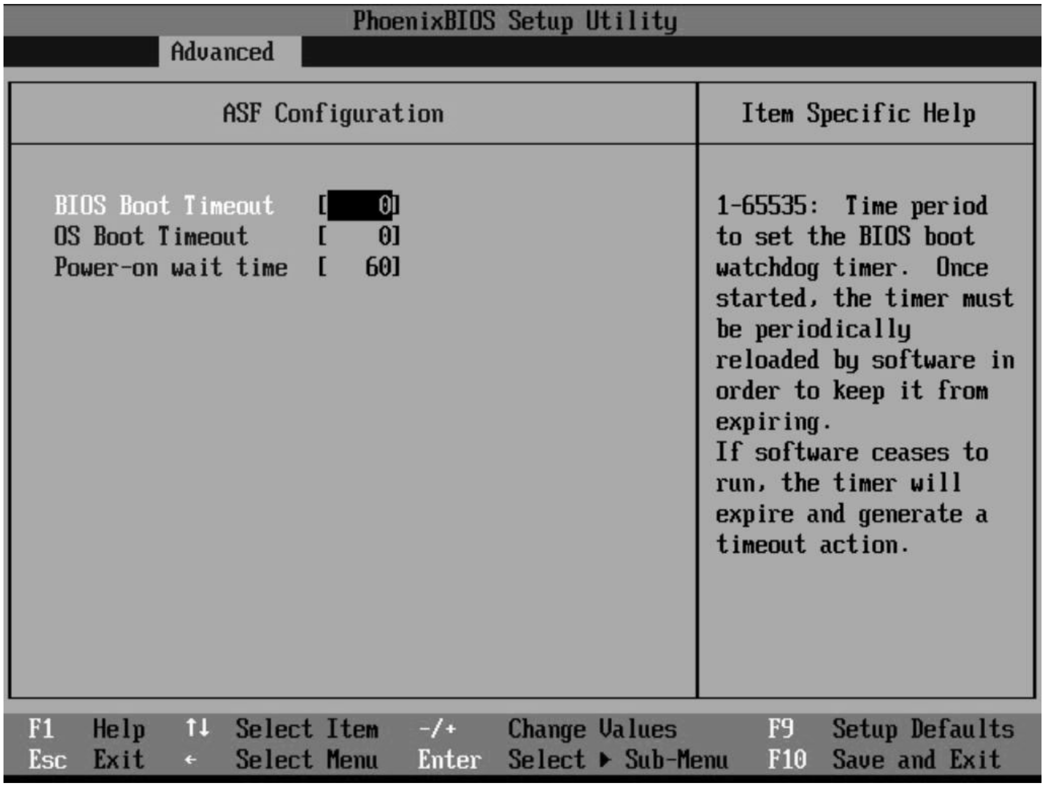
System Health Monitoring



```
                        PhoenixBIOS Setup Utility
            Advanced

                 Health Monitoring                  Item Specific Help

   CPU Vcore            =       1.47 V              All items on this menu
   +3.3V Standby        =       3.37 V              cannot be modified in
   +3.3VIN              =       3.30 V              user mode.  If any
   +5.0VIN              =       4.90 V              items require changes,
   +12.0VIN             =       12.12 V             please consult your
   -12.0VIN             =   -   11.38 V             system Supervisor.
   Vbat                 =       2.86 V
   CPU Temperature      =       26 °C/78 °F
   System Temperature   =       24 °C/75 °F
   FAN 0 Speed          =       13775 RPM
   FAN 1 speed          =       11842 RPM
   FAN 2 speed          =       14062 RPM
   FAN 3 Speed          =       12053 RPM
   FAN 4 Speed          =       12272 RPM
   FAN 5 Speed          =       11842 RPM

 F1   Help  ^v  Select Item  -/+    Change Values        F9   Setup Defaults
 Esc  Exit  <   Select Menu  Enter  Select > Sub-Menu    F10  Save and Exit
```

The system health monitoring screen displays current information regarding the system's CPU status, temperature status and fan status. There are no user-configurable parameters on this page.

Alert Standard Format (ASF) configuration



PhoenixBIOS Setup Utility
Advanced
ASF Configuration
Item Specific Help

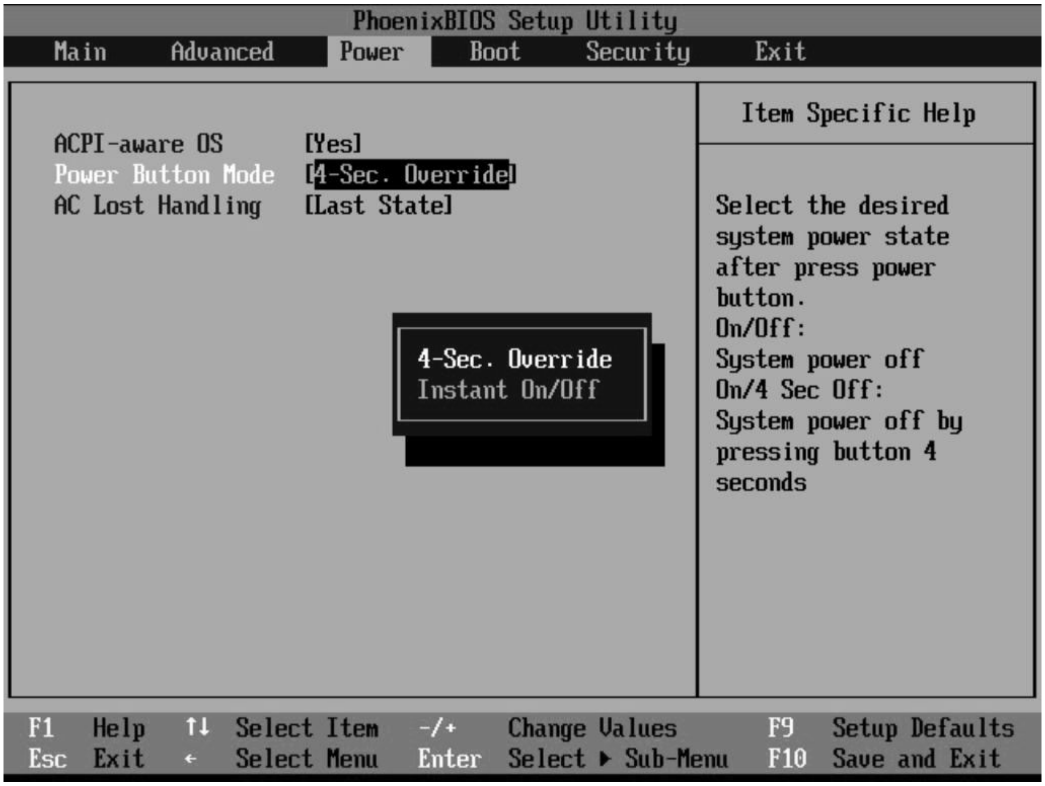
```
BIOS Boot Timeout      [    0]
OS Boot Timeout        [    0]
Power-on wait time     [   60]
```

1-65535: Time period to set the BIOS boot watchdog timer. Once started, the timer must be periodically reloaded by software in order to keep it from expiring. If software ceases to run, the timer will expire and generate a timeout action.

F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults
Esc Exit ↔ Select Menu Enter Select ▸ Sub-Menu F10 Save and Exit

Parameter	Description	Option
BIOS Boot Timeout	Sets the interval for the BIOS boot watchdog timer.	**0** 1-65535
OS Boot Timeout	Sets the interval for the OS boot watchdog timer.	**0** 1-65535
Power-on wait time		**60**

Power



PhoenixBIOS Setup Utility

Main
Advanced
Power
Boot
Security
Exit

ACPI-aware OS [Yes]
Power Button Mode [4-Sec. Override]
AC Lost Handling [Last State]

4-Sec. Override
Instant On/Off

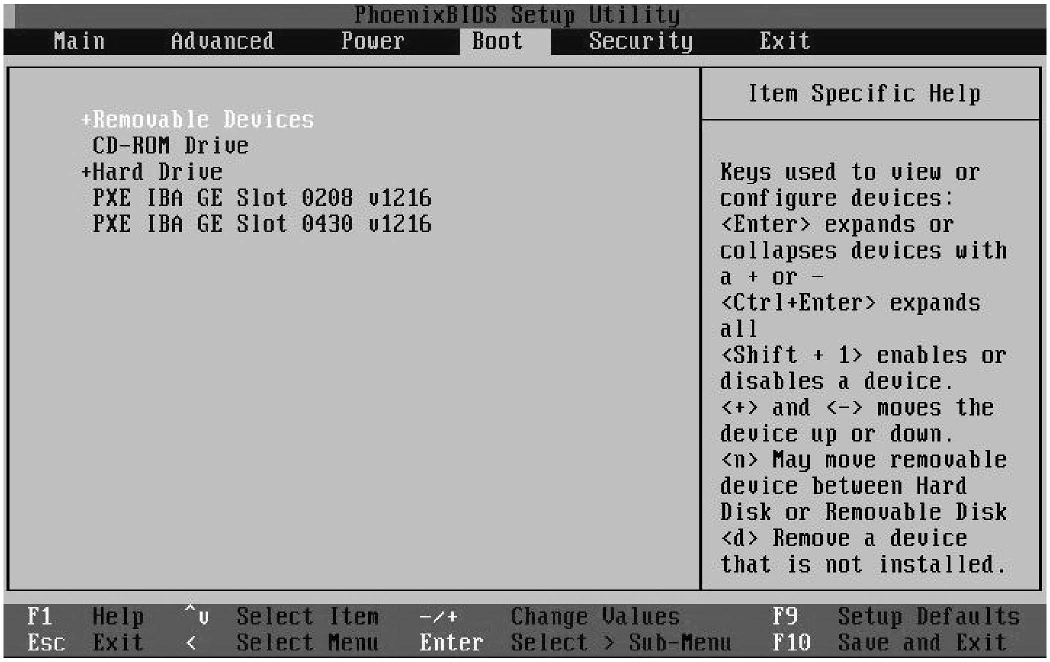
Item Specific Help

Select the desired system power state after press power button.
On/Off:
System power off
On/4 Sec Off:
System power off by pressing button 4 seconds

F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults
Esc Exit ← Select Menu Enter Select ▶ Sub-Menu F10 Save and Exit

Parameter	Description	Option
ACPI-aware OS	Enable or disable ACPI support for the Operating System.	**Yes** No
Power Button Behavior		**4-Sec. Override** Instant On/Off
AC Lost Handling	Sets the power state after shutdown due to power interrupt. If set to ‘Off’ the system remains off. If set to ‘Last State’ the system returns to its last power state.	**Last State** Always On Off

Boot

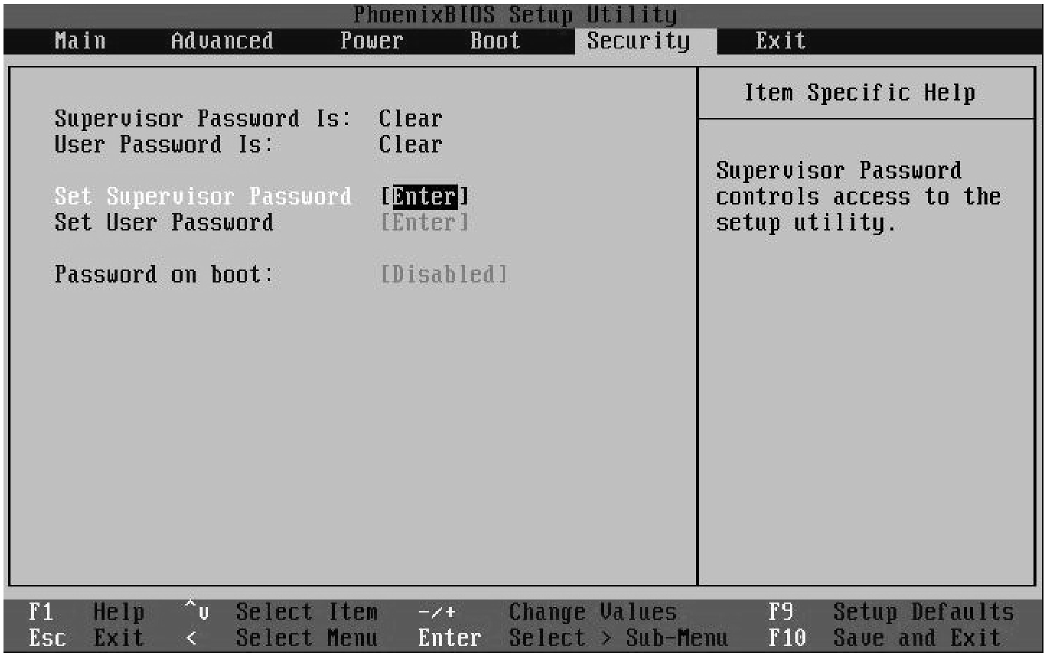


```
                    PhoenixBIOS Setup Utility
  Main      Advanced      Power      Boot      Security      Exit

                                                 Item Specific Help
     +Removable Devices
      CD-ROM Drive                            Keys used to view or
     +Hard Drive                              configure devices:
      PXE IBA GE Slot 0208 v1216              <Enter> expands or
      PXE IBA GE Slot 0430 v1216              collapses devices with
                                              a + or -
                                              <Ctrl+Enter> expands
                                              all
                                              <Shift + 1> enables or
                                              disables a device.
                                              <+> and <-> moves the
                                              device up or down.
                                              <n> May move removable
                                              device between Hard
                                              Disk or Removable Disk
                                              <d> Remove a device
                                              that is not installed.

 F1   Help   ^v  Select Item   -/+    Change Values        F9   Setup Defaults
 Esc  Exit   <   Select Menu   Enter  Select > Sub-Menu    F10  Save and Exit
```

Parameter	**Description**
+Removable Devices	Expandable Allows user to configure Boot Sequence
CD-ROM Drive	
+Hard Drive	
PXE IBA GE Slot 0208 v1216	
PXE IBA GE Slot 0430 v1216	

Security

The Security menu allows you to safeguard and protect the system from unauthorized use by setting up access passwords.


PhoenixBIOS Setup Utility
Main
Advanced
Power
Boot
Security
Exit
Item Specific Help
F1 Help
^v Select Item
-/+ Change Values
F9 Setup Defaults
Esc Exit
< Select Menu
Enter Select > Sub-Menu
F10 Save and Exit

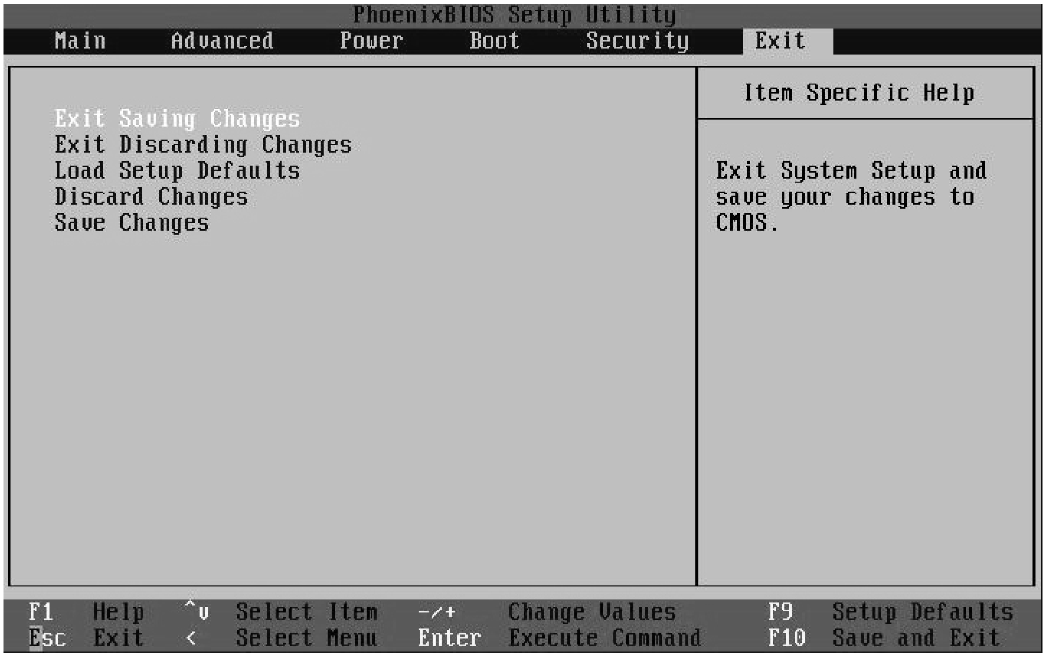
```
Supervisor Password Is:   Clear
User Password Is:         Clear

Set Supervisor Password   [Enter]
Set User Password         [Enter]

Password on boot:         [Disabled]
```

Supervisor Password controls access to the setup utility.

Parameter	Description	Options
Supervisor Password User Password	Displays 'Installed' if password is set.	**Clear** Installed
Set Supervisor Password Set User Password	Sets password by pressing 'Enter.'	**Enter**
Password On Boot	Requires to input password before booting if this value is enabled.	Enabled **Disabled**

Exit

The Exit menu displays the various options to quit from the BIOS setup. Highlight any of the exit options then press **Enter**.


PhoenixBIOS Setup Utility
Main
Advanced
Power
Boot
Security
Exit
Exit Saving Changes
Exit Discarding Changes
Load Setup Defaults
Discard Changes
Save Changes
Item Specific Help
F1 Help
^v Select Item
-/+ Change Values
F9 Setup Defaults
Esc Exit
<> Select Menu
Enter Execute Command
F10 Save and Exit

Exit System Setup and save your changes to CMOS.

Parameter	Description
Exit Saving Changes	Saves changes made and closes the BIOS setup.
Exit Discarding Changes	Discards changes made and closes the BIOS setup.
Load Setup Defaults	Loads the optimal settings for all BIOS setup parameters. Optimal settings are quite demanding in terms of resources consumption. If you are using low-speed memory chips or other kinds of low-performance components and you choose to load these settings, the system might not function properly.
Discard Changes	Discards all changes made on the BIOS setup.
Save Changes	Saves all changes made to BIOS setup without exiting the utility.

Appendix A: Management software installation

This appendix shows you how to install the
ASM and EasyBUILD™ software packages.

Installing ASM

Acer Server Manager (ASM) consists of the ASM Console and the ASM Agent. These two components are both required to perform server management tasks.

System requirements

ASM requires TCP/IP connectivity between the ASM Console and the ASM Agent.

ASM Agent

- Altos Server System
- Minimum of 128 MB RAM
- SCSI/IDE hard drive with at least 100 MB free hard disk space
- Windows 2000 server/advanced server, Windows server 2003 web/standard/Enterprise editions, or RedHat Linux 7.3/8.0

ASM Console

- Intel Pentium III (500 MHz) or higher processor
- 128 MB of RAM
- SCSI/IDE hard drive with at least 100 MB free hard disk space
- Microsoft Windows 2000 Professional/XP/Server/Advanced Server operating system
- Ethernet card
- Windows 2000 professional, Windows XP, Windows 2000 server/advanced server, Windows server 2003 web/standard/Enterprise editions

System setup

Make sure that your system meets the requirements listed above before proceeding. You may also want to change your screen to 800 x 600 resolution or higher for optimum viewing.

Installing ASM Agent (Windows version)

To install ASM Agent:

1 Log in to the managed server using the Administrator account.

2 Insert the EasyBUILD™ Management CD into the server's CD-ROM drive.

The installation sequence will automatically begin.

3 Select the option for ASM installation.

The installation wizard will be initialized.

4 Follow all onscreen instructions to complete installation.

For detailed instructions on installing ASM Agent, refer to the ASM User's manual.

ASM Agent will auto-launch as a Windows service after rebooting the system.

Installing ASM Console (Windows version)

To install ASM Console:

1 Log in to the target Windows-based PC using the Administrator account.

2 Insert the EasyBUILD™ Management CD into the computer's CD-ROM drive.

The installation sequence will automatically begin.

3 Select the option for ASM installation.

The installation wizard will be initialized.

4 Follow all onscreen instructions to complete installation.

For detailed instructions on installing ASM Console, refer to the ASM User's manual.

To launch the program, on the Windows taskbar click on the **Start** button, point to **programs**, select **Acer Server Manager** then click **Acer Server Manager**

Installing ASM Agent (Linux version)

To install the ASM6 Agent on RedHat Linux 8.0

1. Insert the ASM6 installation CD into your computer's optical drive.
2. Mount the CD-ROM drive with "mount /dev/cdrom /mnt/cdrom" command. For more information on mount command and the options, please refer to RedHat Linux user's guide.
3. Change the working directory to ASM6 Linux Agent subdirectory with the command "cd /mnt/cdrom/LinuxAgent".
4. Type in the command "./asmsetup install" to install the ASM6 Linux Agent. Follow the prompted installation guide, and you can install the ASM6 Linux Agent with ease.
5. Umount the CD-ROM Drive with "umount /mnt/cdrom" command.

For detailed instructions on installing ASM Agent on Linux systems, refer to the ASM User’s manual.

ASM agent will auto-launch demon service after rebooting the system. There is no Linux version of ASM Console.

Appendix B: Rack installation

This appendix shows you how to use the optional rack mount kit to put your Altos R310 server into a server rack.

System rack installation

Important! Observe the electrostatic discharge (ESD) precautions shown on page 40 when perfoming the following procedures. Do not attempt the procedures described in the following sections unless you are a qualified technician.

Equipment rack precautions

Follow the rack manufacturer's safety and installation instructions for proper rack installation.

The following additional rack safety installation measures should be considered:

- Anchor the equipment rack

  The equipment rack must be anchored to an unmovable suitable support to prevent the rack from falling over when one or more systems are fully extended out of the rack assembly. You must also consider the weight of any other devices installed in the rack assembly. The equipment rack must be installed according to the manufacturer's instructions.

- Main AC power disconnect

  You are responsible for installing an AC power disconnect for the entire rack unit. This main disconnect must be readily accessible, and it must be labeled as controlling power to the entire unit, not just to the system(s).

- Earth ground the rack installation

  To avoid the potential for an electrical shock hazard, the rack assembly itself must be suitably earth grounded, according to your local regional electrical codes. This typically will require the rack to have its own separate earth ground. We recommend you consult a locally certified electrician.

- Elevated Operating Ambient Temperature

  The maximum operating temperature of the system is 35^{o}C (95^{o}F). Careful consideration should be given to installing the system in an environment compatible with the 35^{o}C (95^{o}F) maximum ambient temperature.

- Reduced Airflow

  The amount of airflow required for the safe operation of the equipment should not be compromised when installing the system in a rack.

- Mechanical Loading

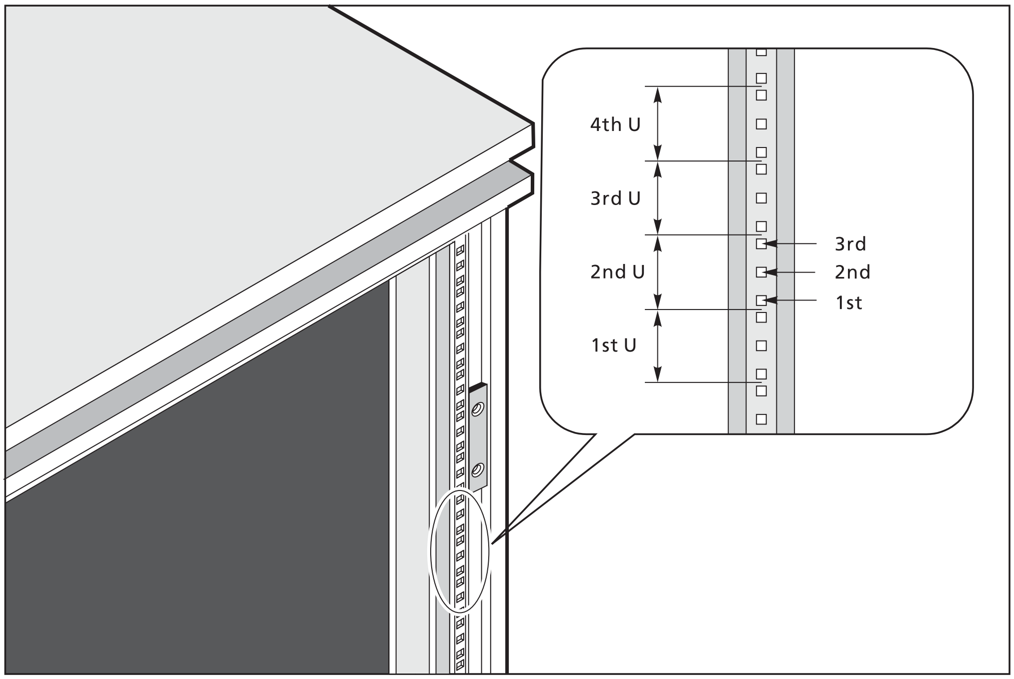
  Exercise care when mounting the system in a rack to avoid any accidents.

- Circuit Overloading

  Appropriate consideration should be given when connecting the supply circuit to the system to avoid any circuit overload. The system nameplate rating should be used when addressing concerns about circuit overload.

Vertical mounting hole pattern

The four vertical rails of a rack contain mounting holes arranged in a manner shown in the figure below:



The system occupies 1U in the rack. Count the U positions and hole numbers from the bottom up.

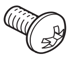
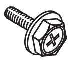
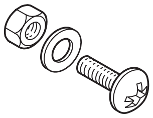
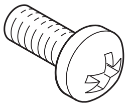
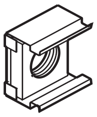
Note: The unit of measurement used in this document is "U" (1U = 1.75 inches or 44.45 mm). The total sum of the heights of all components in the rack measured in "U" cannot exceed the height of the rack. For more information, refer to the documentation that came with your system rack.

The distance from the center of two holes with closer spacing to the center of the next pair is equivalent to 1U.

When installing components, you must start your measurement from the center of the two holes with closer spacing. Otherwise, the screw holes on the component may not match those on the rack.

Screw types for rack installation

The following screws are used in the assembly of the Acer Altos R310 and other rack-mountable components.

	Screw type	Figure	Usage
1	#8-32 x 0.25 inch		Securing the inner mounting rails to the server tray
2	Hex head #6-32 0.25 inch		Attaching the side handles to the server
3	M4 x L8 M4 nut		Securing the mounting brackets to the inner sliding piece
4	M6 x L10		Securing the cable carrier and the mounting rails to the rack
	Cage nut		Supports the M6 metal screws for securing server components to the rack

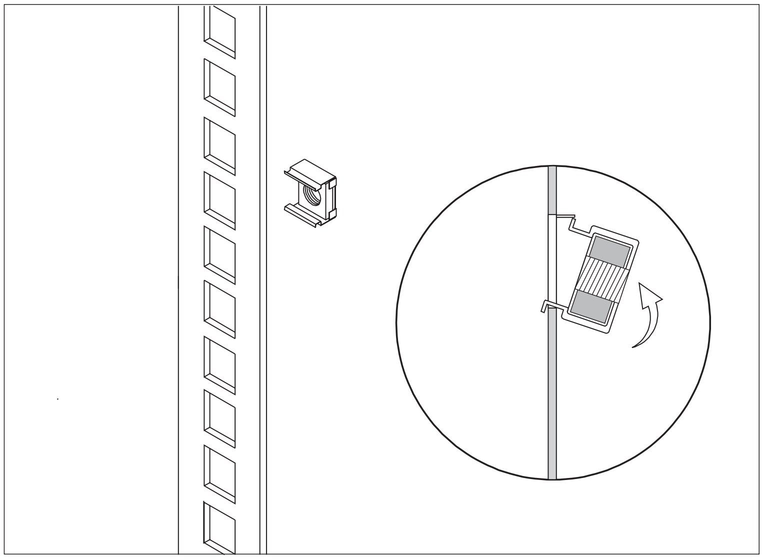
Installing cage nuts

Cage nuts are use to secure systems and other components to the vertical rails in the rack.

To install cage nuts:

1 Insert the lower lip of the cage nut over the bottom of the opening at the back of a rail.

2 Pinch the flexible edges of the cage nut with your fingers and press until it locks into place.



3 Repeat this process to install the other cage nuts in their appropriate locations.

Installing the system into the rack

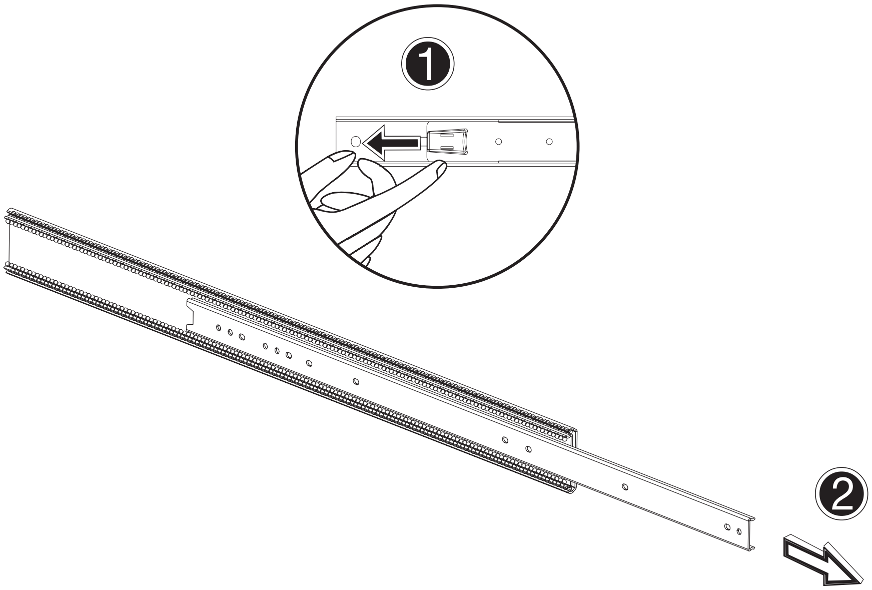
To install the system into the rack:

The Altos R310 Rack mount kit contains two sets of rack brackets and mounting rails. The rack brackets attach to the mounting rails to the server. Each bracket is composed of three pieces: a detachable inner rail and fixed middle and outer rails. The mounting rails allow the system to slide in and out of the rack mount for maintenance purposes.

1 Remove the inner rail from the rack brackets.

   a Extend the inner rail until the rail release latch clicks.

b Hold down the latch **(1)** then slip the inner rail out **(2)**.

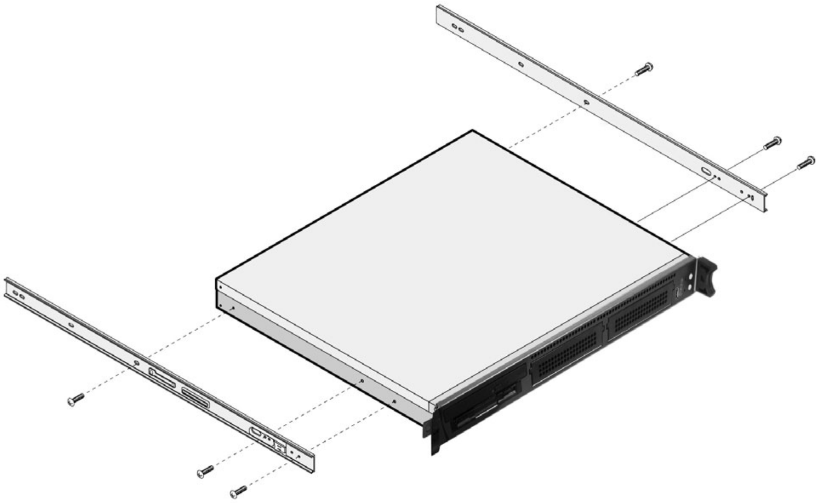


c Repeat this procedure with the other rack bracket.

2 Attach the inner rails to both sides of the server.

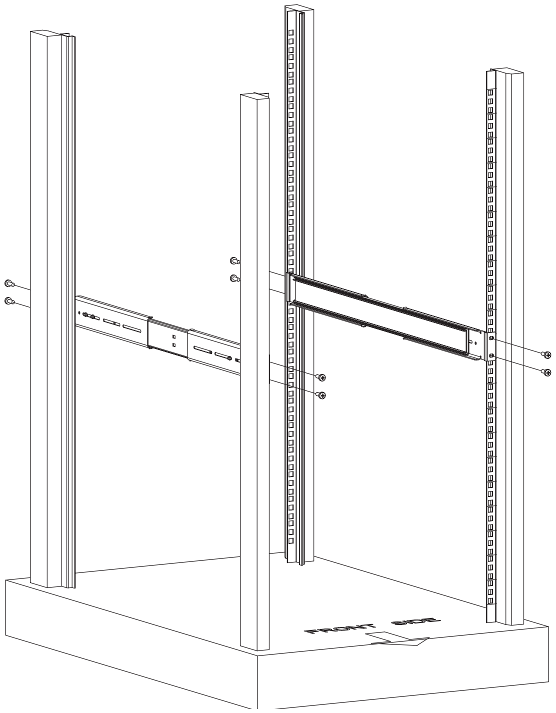
a Align the inner rails to the three screw holes located on either side of the server.

b Secure the rails to the server using #8-32 x 0.25 inch screws.

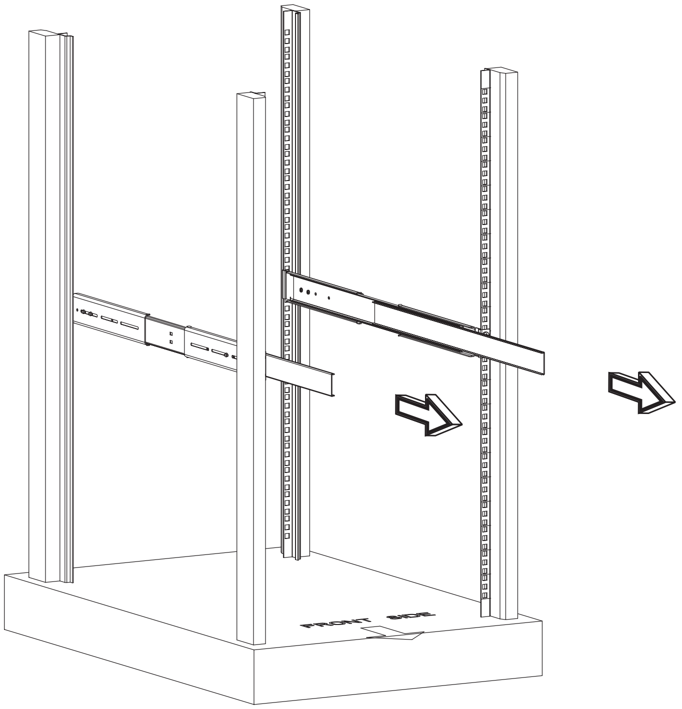


3 After attaching the inner rails to the server, put the server aside and install the server mounting rails to the server rack.

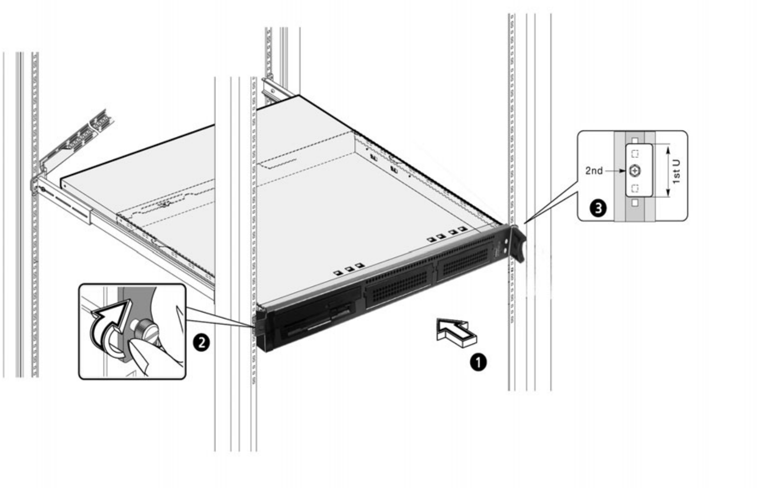
4 Install the mounting rails to the rack using four M6 x L10 screws for each mounting rail and the cage nuts you installed earlier.



5 Extend the middle sliding piece of each mounting rail forward until it clicks.



6 Install the server into the rack by carefully aligning the inner rails attached to the server with the mounting rails on the rack.
   - a Press the release latch on both sides of the server.
   - b Slide the server into the rack then push until it clicks.



Caution! To avoid personal injury, care should be taken when pressing the component rail release latches and sliding the component into the rack.

Appendix C: SATA RAID configuration utility

This appendix provides instructions for using the SATA RAID configuration utility.

Hardware Requirements for R310 SATA RAID

Your system needs to have at least two SATA hard drives installed to create a RAID array. A single hard drive is treated as JBOD and is insufficient to create a disk array.

SATA RAID POST information

When the server boots up, POST information displays connected SATA HDD information, array information, and SATA JBOD information.

SATA HDD information includes:

- attached port ID
- HDD model
- firmware version
- drive capacity
- drive status

Array information includes:

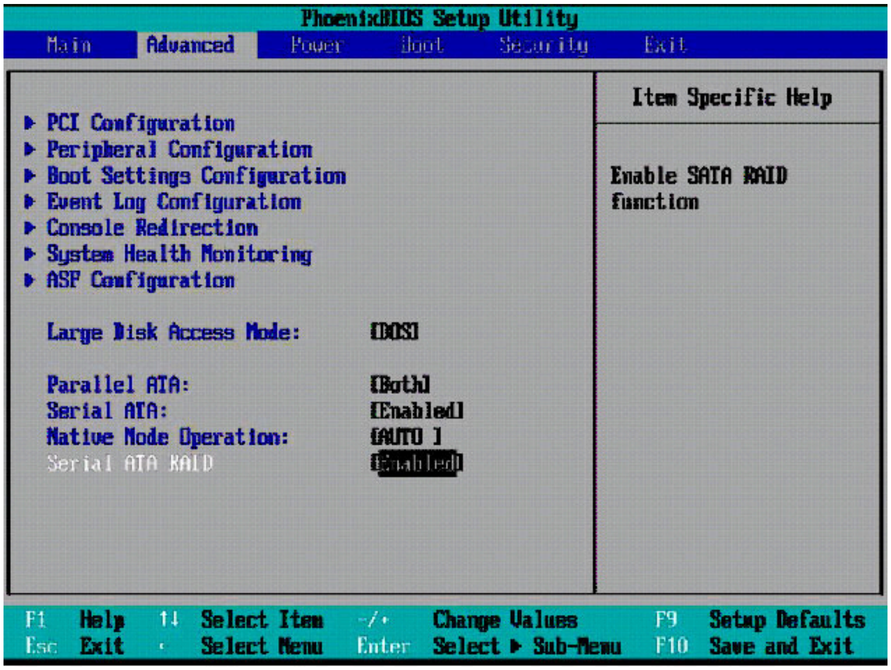
- array RAID level
- port
- drive models
- drive capacities

Server BIOS settings

Your system's BIOS settings must be modified to enable SATA RAID. Follow the steps below to change the BIOS settings and enable RAID configuration.

1 Enter the BIOS Setup utility by pressing F2 when prompted during system startup. See "Entering BIOS setup" on page 60 for more information.

2 Select the Advanced menu as shown below.



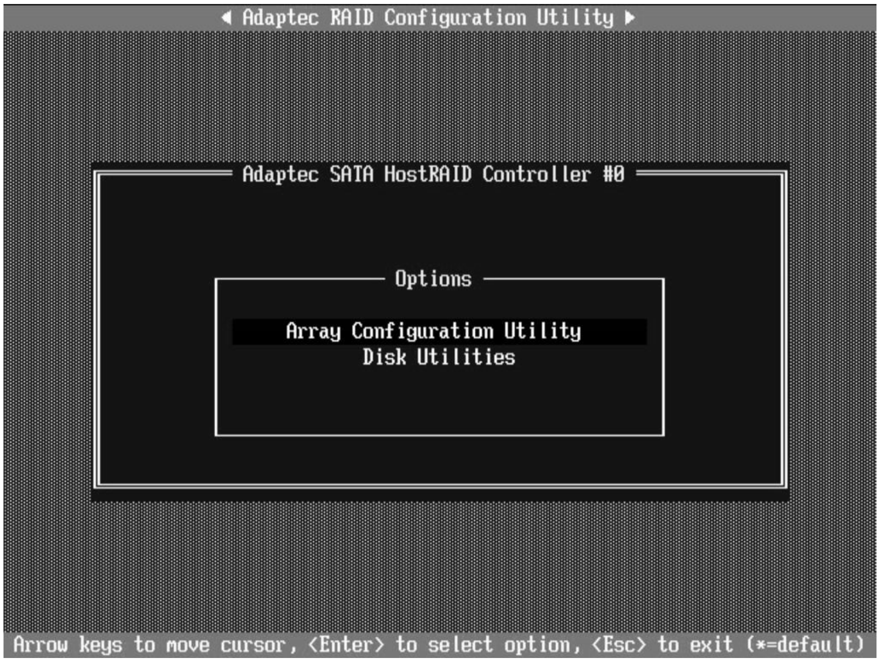
```
                    PhoenixBIOS Setup Utility
   Main    Advanced    Power    Boot    Security    Exit

 ▶ PCI Configuration                                Item Specific Help
 ▶ Peripheral Configuration
 ▶ Boot Settings Configuration                    Enable SATA RAID
 ▶ Event Log Configuration                        function
 ▶ Console Redirection
 ▶ System Health Monitoring
 ▶ ASF Configuration

   Large Disk Access Mode:        [DOS]

   Parallel ATA:                  [Both]
   Serial ATA:                    [Enabled]
   Native Mode Operation:         [AUTO ]
   Serial ATA RAID                [Enabled]

 F1   Help   ↑↓   Select Item   -/+     Change Values        F9    Setup Defaults
 Esc  Exit   ↔    Select Menu   Enter   Select ▶ Sub-Menu    F10   Save and Exit
```

3 Change the "Serial ATA" and "Serial ATA RAID" parameters to ENABLED.

4 Press the F10 key to save the changes and exit the BIOS Setup environment.

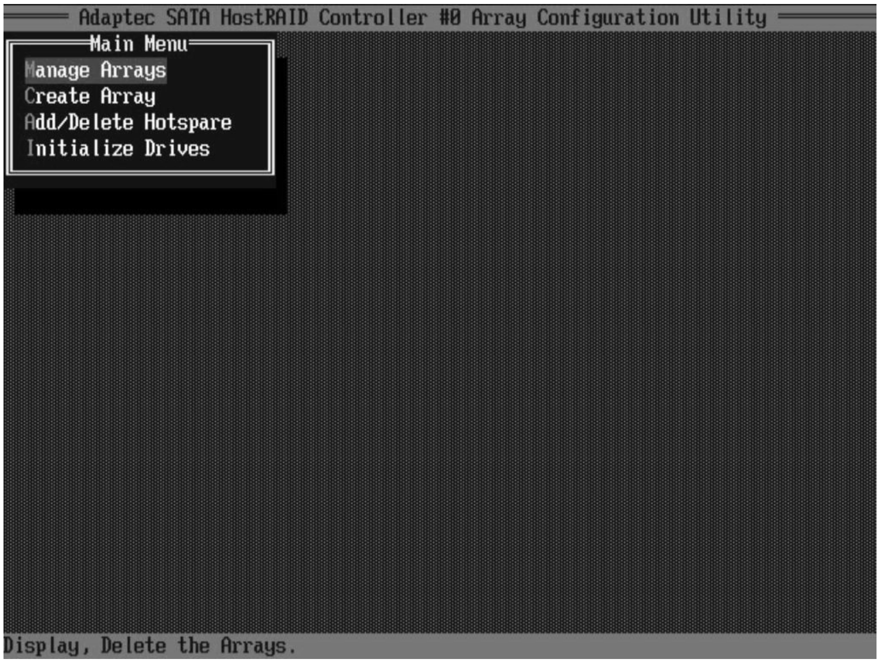
Using the Adaptec RAID configuration utility

This utility is BIOS based and, like BIOS, is accessed during system startup. During POST press <Ctrl> + <A> to enter the Adaptec RAID configuration utility. The following screen is displayed.


◀ Adaptec RAID Configuration Utility ▶
Adaptec SATA HostRAID Controller #0
Options
Array Configuration Utility
Disk Utilities

Arrow keys to move cursor, <Enter> to select option, <Esc> to exit (*=default)

Enter the Array Configuration Utility by pressing the Enter key. The Main Menu will be displayed, as shown below


Adaptec SATA HostRAID Controller #0 Array Configuration Utility
Main Menu
Manage Arrays
Create Array
Add/Delete Hotspare
Initialize Drives

Display, Delete the Arrays.

Use the arrow keys to select from the following options:

- <M>anage Arrays
- <C>reate Arrays
- <A>dd / Delete Hotspare
- <I>nitialize Drives

Note: The first letter of each option can be used as a shortcut. For example, to open the Manage Arrays option, press <M> on the keyboard.

Manage Arrays

Before using this function, an array(s) must be created. Refer to the following section for details.

To View Array Properties

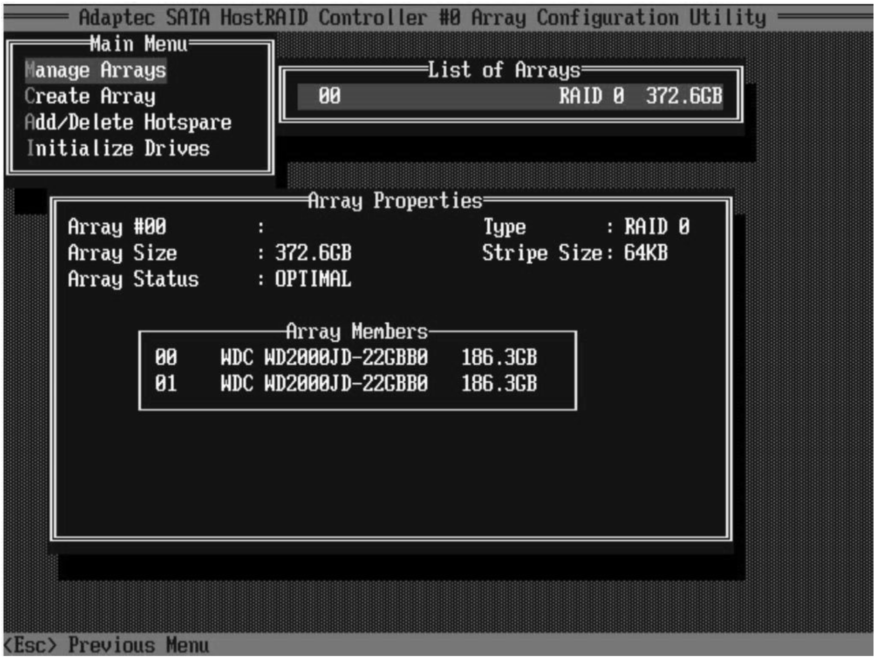
1 Select Manage Arrays from the Main Menu.

2 Select an array and press <Enter> to display the array's properties and members.

Note: Bootable array(s) denoted by an asterisk (*).

To Delete an Array

1 Select an Array from the List of Arrays as shown below.


Adaptec SATA HostRAID Controller #0 Array Configuration Utility
Main Menu
Manage Arrays
Create Array
Add/Delete Hotspare
Initialize Drives
List of Arrays
Array Properties
Array Members
<Esc> Previous Menu

```
00                          RAID 0   372.6GB

Array #00         :                 Type        : RAID 0
Array Size        : 372.6GB         Stripe Size : 64KB
Array Status      : OPTIMAL

    00    WDC WD2000JD-22CBB0    186.3GB
    01    WDC WD2000JD-22CBB0    186.3GB
```

2 Press the <Delete> key.

To Verify a RAID 1

If a RAID 1 is created using Quick Init, this utility can be used to verify the array.

1 Select the RAID 1 Array from the List of Arrays.

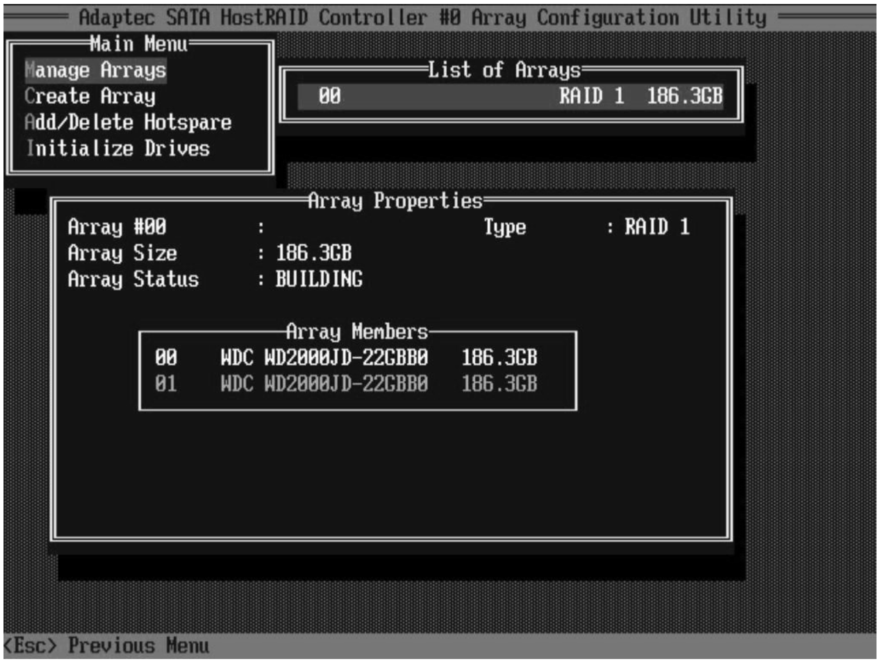
2 Press <Ctrl> + <S> to begin RAID verification.

3 Press <Y> or <N> to accept or decline automatic repairs by the utility.

To Rebuild RAID 1

If a RAID 1 is created with Build and Clear and then stopped, the Rebuild function of the utility can be used to resume.

1 Select the RAID 1 Array from the List of Arrays.


Adaptec SATA HostRAID Controller #0 Array Configuration Utility
Main Menu
Manage Arrays
Create Array
Add/Delete Hotspare
Initialize Drives
List of Arrays
Array Properties
Array Members
<Esc> Previous Menu

```
00                RAID 1   186.3GB
```

```
Array #00       :             Type       : RAID 1
Array Size      : 186.3GB
Array Status    : BUILDING

        00    WDC WD2000JD-22GBB0    186.3GB
        01    WDC WD2000JD-22GBB0    186.3GB
```

2 Press <Ctrl> + <R> to begin the rebuid operation.

To Mark/Unmark an Array as Bootable

1 Select an array from the List of Arrays.

2 Press <Ctrl> + <B> to toggle wether an array is bootable.

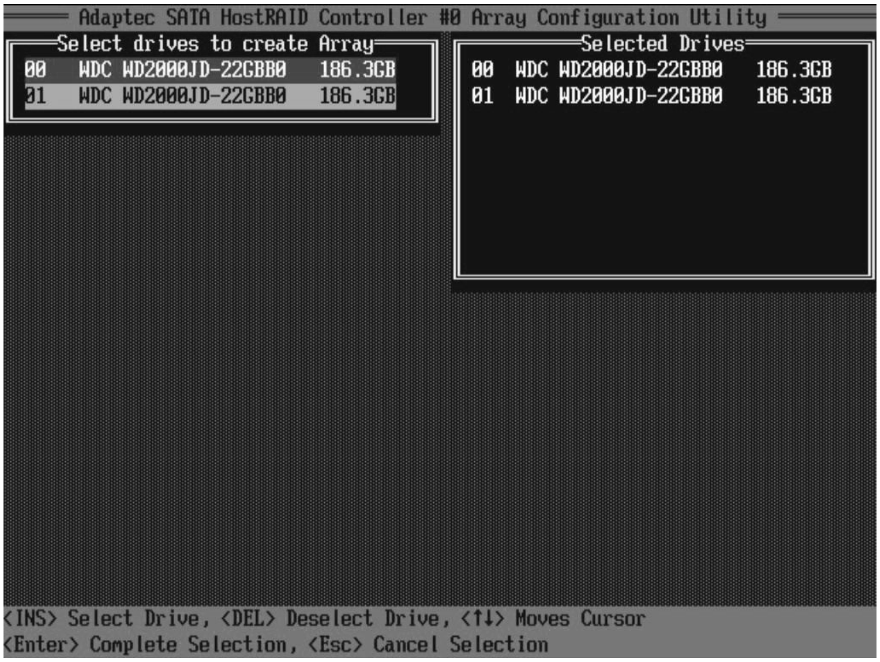
Create and Manage RAID 0

Create RAID 0 from new drives

1 Initialize the drives.

2 In the Main Menu, select **Create Array**, and press <Enter>.

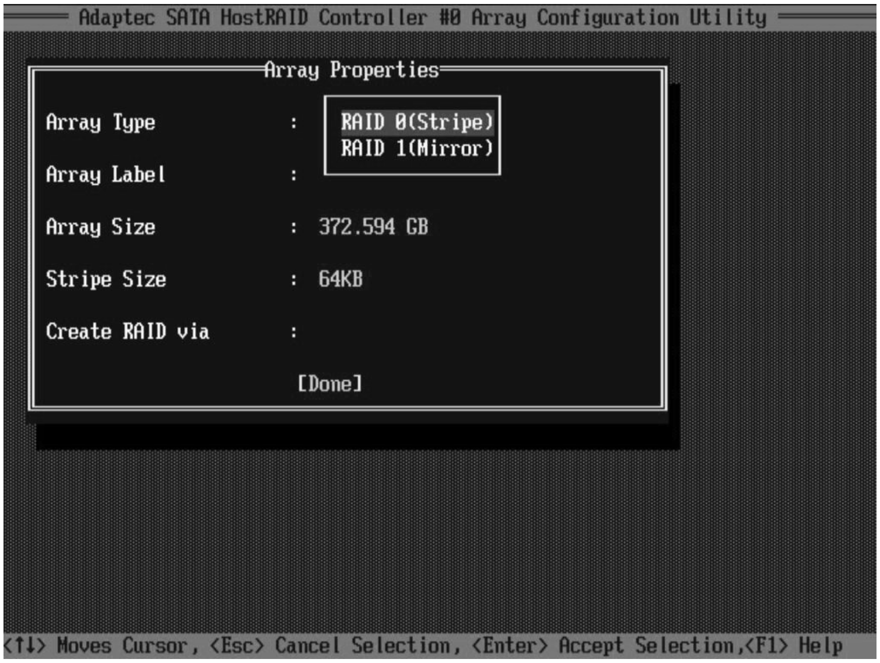
3 Press the <Ins> (or, on some keyboards, <Insert>) key to add the new drive(s) to the Selected Drives field.



```
Adaptec SATA HostRAID Controller #0 Array Configuration Utility
Select drives to create Array                 Selected Drives
00  WDC WD2000JD-22GBB0   186.3GB        00  WDC WD2000JD-22GBB0   186.3GB
01  WDC WD2000JD-22GBB0   186.3GB        01  WDC WD2000JD-22GBB0   186.3GB

<INS> Select Drive, <DEL> Deselect Drive, <↑↓> Moves Cursor
<Enter> Complete Selection, <Esc> Cancel Selection
```

4 Press the <Enter> key to confirm the selection and continue.

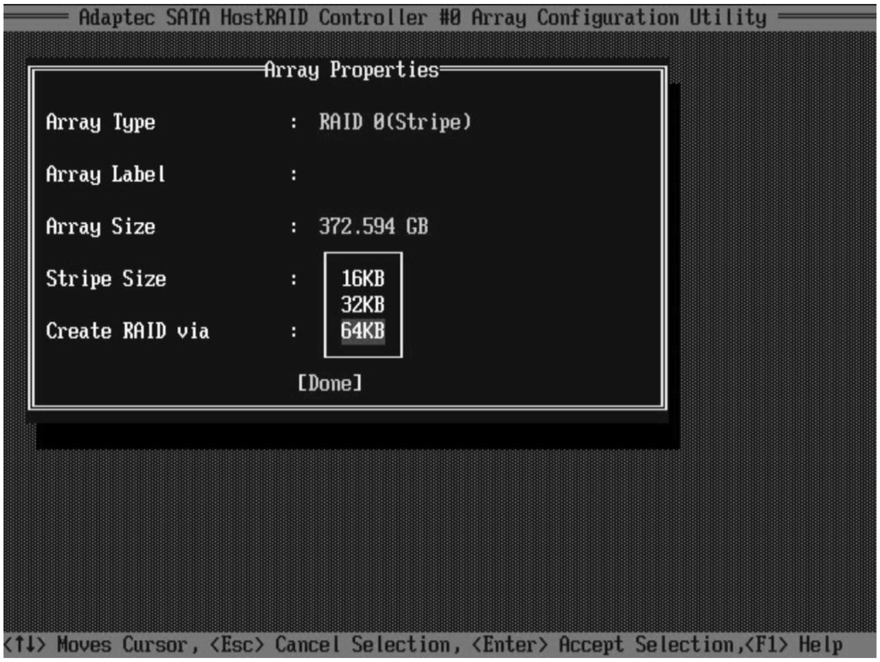
5 In the **Array Type** field, use the arrow keys to select RAID 0 (Stripe), and press the <Enter> key to confirm your selection.



```
Adaptec SATA HostRAID Controller #0 Array Configuration Utility
                    Array Properties
Array Type          :  RAID 0(Stripe)
                       RAID 1(Mirror)
Array Label         :

Array Size          :  372.594 GB

Stripe Size         :  64KB

Create RAID via     :

                       [Done]

<↑↓> Moves Cursor, <Esc> Cancel Selection, <Enter> Accept Selection,<F1> Help
```

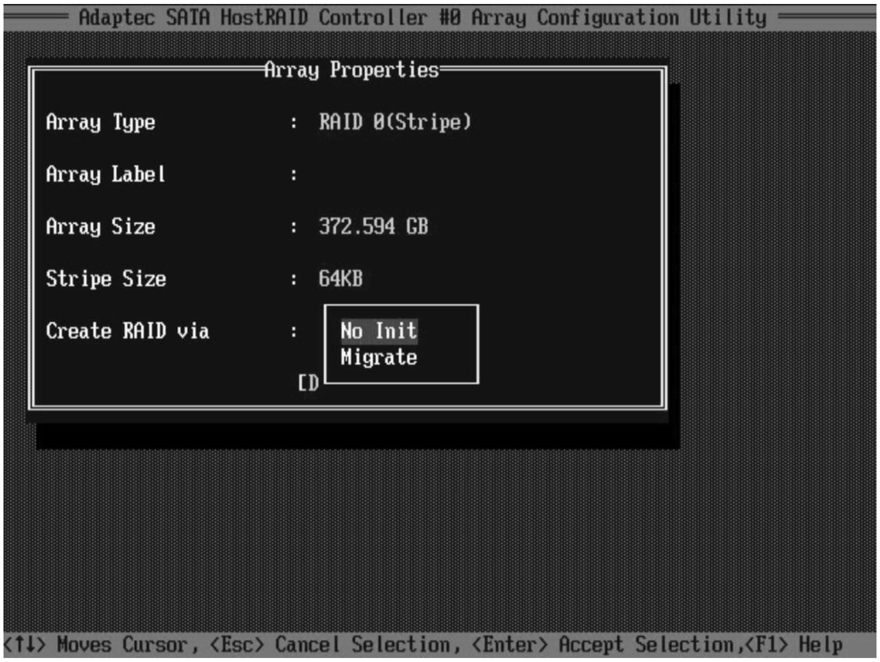
6 Use the <Tab> key to scroll to the **Array Label** field and enter text to identify the array. Press <Enter> to confirm the array's label.

7 Scroll to **Stripe Size**, by using the <Tab> key, and select 16 KB, 32 KB, or 64 KB using the arrow keys. Press <Enter> to confirm the array stripe size.



```
Adaptec SATA HostRAID Controller #0 Array Configuration Utility

                  Array Properties

 Array Type          :  RAID 0(Stripe)

 Array Label         :

 Array Size          :  372.594 GB

 Stripe Size         :  16KB
                        32KB
 Create RAID via     :  64KB

                     [Done]

<↑↓> Moves Cursor, <Esc> Cancel Selection, <Enter> Accept Selection,<F1> Help
```

8 Using the <Tab> key, scoll to the **Create RAID via** field and select No Init. Press <Enter> to continue.



```
Adaptec SATA HostRAID Controller #0 Array Configuration Utility

                  Array Properties

 Array Type          :  RAID 0(Stripe)

 Array Label         :

 Array Size          :  372.594 GB

 Stripe Size         :  64KB

 Create RAID via     :  No Init
                        Migrate
                     [D

<↑↓> Moves Cursor, <Esc> Cancel Selection, <Enter> Accept Selection,<F1> Help
```

9 With the <Tab> key, scroll to **Done,** and press <Enter> to exit the utility.

Create RAID 0 from source drive

1 Install a new HDD and initalize it.

Warning! Do NOT initailize the source drive! Doing so will destroy all data!

2 From the Main Menu, select **Create Array**, and press <Enter>.

3 Press the <Ins> key to add to the new drive(s) to the Selected Drives field.

4 Press the <Enter> key to confirm your selection.

5 In the **Array Type** field, move the cursor to RAID 0(Stripe) and press the <Enter> key.

6 Use the <Tab> key to scroll to the **Array Label** field and enter text to identify the array. Press <Enter> to confirm the array's label.

7 Scroll to **Stripe Size**, by using the <Tab> key, and select 16 KB, 32 KB, or 64 KB using the arrow keys. Press <Enter> to confirm the array stripe size.

8 Using the <Tab> key, scoll to the **Create RAID via** field and select. Migrate. Press <Enter> to continue.

9 With the <Tab> key, scroll to **Done,** and press <Enter>.

10 Select the Source Drive, and press <Enter> followed by <Y>.

Create RAID 1 from new drives

1 Install new HDD(s) and initalize it/them.

2 From the Main Menu, select **Create Array**, and press <Enter>.

3 Press the <Ins> key to add to the new drive(s) to the Selected Drives field.

4 Press the <Enter> key to confirm your selection.

5 In the **Array Type** field, move the cursor to RAID 1(Mirror) and press the <Enter> key.

6 Use the <Tab> key to scroll to the **Array Label** field and enter text to identify the array. Press <Enter> to confirm the array's label.

7 Scroll to **Stripe Size**, by using the <Tab> key, and select 16 KB, 32 KB, or 64 KB using the arrow keys. Press <Enter> to confirm the array stripe size.

8 Using the <Tab> key, scoll to the **Create RAID via** field and select. Clear or Quick Init. Press <Enter> to continue.

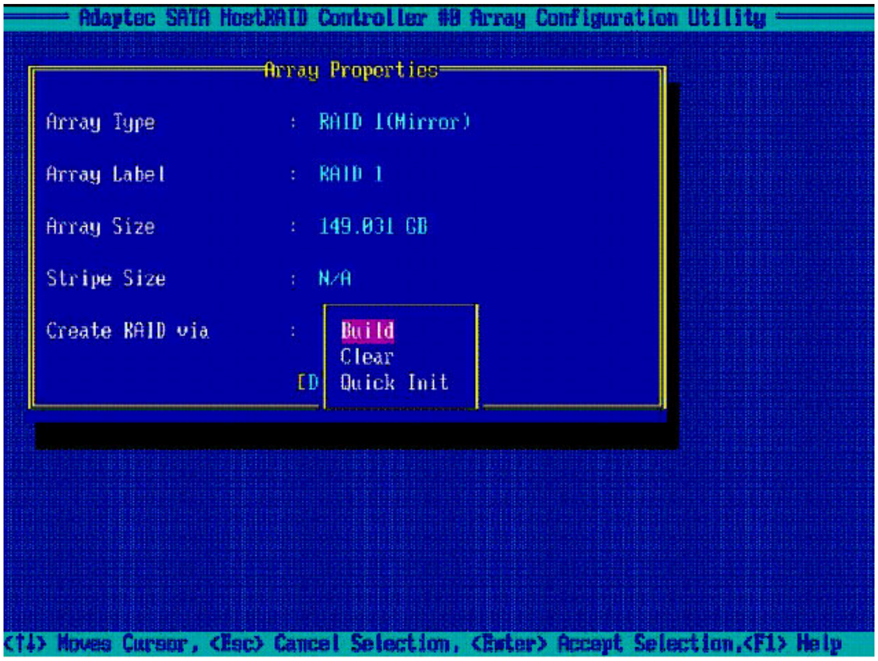
9. With the <Tab> key, scroll to **Done,** and press <Enter>.

Create RAID 1 from a source drive

1. Install a new HDD and initalize it.

Warning! Do NOT initailize the source drive!

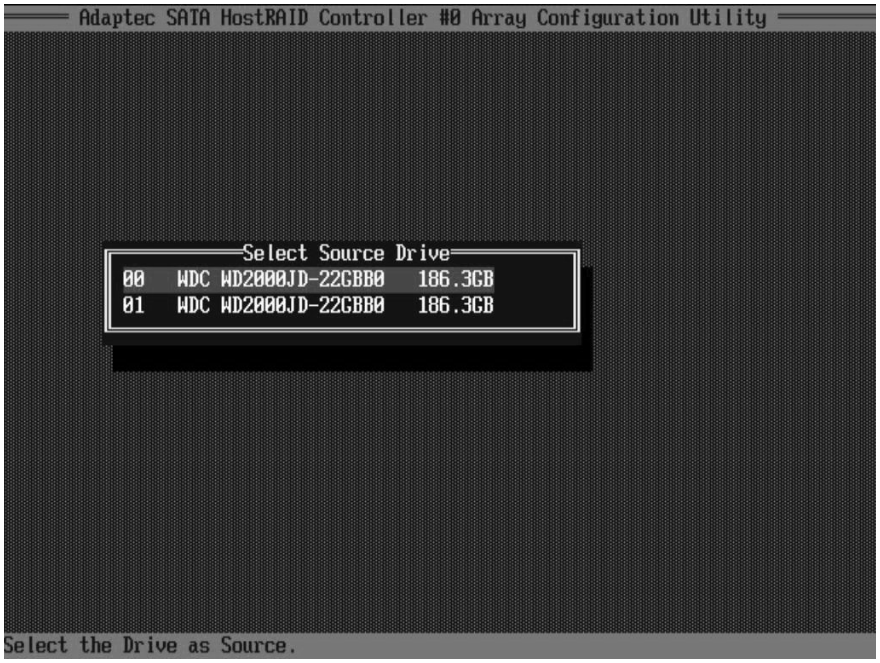
2. From the Main Menu, select **Create Array**, and press <Enter>.
3. Press the <Ins> key to add to the new drive(s) to the Selected Drives field.
4. Press the <Enter> key to confirm your selection.
5. In the **Array Type** field, move the cursor to RAID 1(Mirror) and press the <Enter> key.
6. Use the <Tab> key to scroll to the **Array Label** field and enter text to identify the array. Press <Enter> to confirm the array's label.
7. Using the <Tab> key, scoll to the **Create RAID via** field and select. Build. Press <Enter> to continue.



```
Adaptec SATA HostRAID Controller #0 Array Configuration Utility

                    Array Properties

Array Type            :  RAID 1(Mirror)

Array Label           :  RAID 1

Array Size            :  149.031 GB

Stripe Size           :  N/A

Create RAID via       :

<↑↓> Moves Cursor, <Esc> Cancel Selection, <Enter> Accept Selection,<F1> Help
```

8. With the <Tab> key, scroll to **Done,** and press <Enter>.

9 Select the Source Drive, and press <Enter> followed by <Y>.



```
Adaptec SATA HostRAID Controller #0 Array Configuration Utility

Select Source Drive
00   WDC WD2000JD-22GBB0   186.3GB
01   WDC WD2000JD-22GBB0   186.3GB

Select the Drive as Source.
```

Initialize Drives

Prepare hard disk drives for creating arrays.

1 In the **Main Menu**, select Initialize Drives and press <Enter> to continue.

2 Use the cursor to select a drive, then press the <Ins> key to add the new drive(s) to the Selected Drives field.

3 Press <Enter> and <Y> to complete the Initialization.

Disk Utilities

Format Disk

1. In **Options**, select Disk Utility.
2. Select a drive from the list and press the <Enter> key.
3. Select Format Disk, then press <Enter> and <Y> to proceed.

Verify Disk Media

1. In **Options**, select Disk Utility
2. Select a drive from the list and press <Enter>.
3. Select Verify Disk Media. Then press <Enter> and <Y> to proceed.

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